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CAR ACTION

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ON THE COVER: New for '98—JR R-1 radio, Progressive Suspension Piggy Back Shock Reservoir, Trinity D3 motor, LRP IPC speed control and Kyosho Super Eight GP20 Rally Car (photos by Walter Sidas); HPI Nitro Mini (photo by John Howell); Associated RC10T3 (photo by John Howell).

ON THIS PAGE: Tamiya Nats Concours Winning Kure Nismo GT-R Skyline (photo by George M. Gonzalez); action from the NORRCA Off-Road Nats (photo by George M. Gonzalez); Kawada M-24 Tripmate & ABC Hobby DTM 1/24-scale cars (photo by Walter Sidas).

Hot Product Extravaganza

Every year around this time, R/C car manufacturers unveil their latest products. Naturally, we're always psyched during this time because the *Car Action* staff are true R/C enthusiasts like you, and we get just as excited about new

products as you do. With that in mind, it is our duty as the world's leading R/C authority to make you aware of what's available and what you can expect to see in '98 at your local

hobby shop. Our heads are still spinning after shuffling through endless piles of press releases, photos and products. We sincerely hope you'll be pleased with our efforts as you thumb the pages of our mega "New for '98" feature.

New For '98

Set 'em up, then knock 'em down

Anyone who takes touring-car racing seriously knows about Tamiya team driver Dave Jun and his ROAR- and NORRCA-winning TA03F-Pro. After many late evening phone calls and a lot arm twisting, we managed to persuade Dave to reveal in complete detail the secrets of how he set up his TA03 to defeat a field of high-tech prototype vehicles driven by the world's most talented R/C racers. Now it's your turn to win big at that next parking-lot racing event; clear a spot on your workbench and listen up!

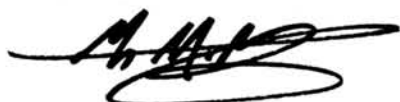
Nitro touring cars are smokin'

It takes only a few seconds behind the wheel of a nitro-powered touring car to convince you that you have discovered the best thing since sliced bread. These cars look extremely cool; they're fast and, because of their 4WD traction, they stick to the ground like bubble gum. We gathered all the nitro-powered touring cars we could get our hands on—seven beauties—and prepared a special "Nitro Touring Car Guide" that reveals all. Do not miss this feature.

Carrying on the Winning Tradition

We gave you a sneak peek at Associated's brand-new RC10T3 racing truck in the October '97 issue. Based on the world championship-winning RC10B2 design, the T3 boasts many special racing features that are sure to make it a regular at winners' circles around the world. After weeks of racing/testing, it's time to reveal our findings. I'll tell you this much right now: this truck is hot!

On behalf of myself and the entire *R/C Car Action* staff, I wish you all a happy and prosperous New Year.



George M. Gonzalez
Senior West Coast Editor

Radio Control CAR ACTION

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100 East Ridge, Ridgefield, CT 06877-4606

**Monster Mash**

Your magazine rocks! My brother hides his issues so I can't take them to school. Anyway, I read that 90 percent of the Kyosho HiRider Vette's parts are compatible with those of the Kyosho Outrage. Can my Outrage be converted to a monster truck?

DANIEL SELLERS

Why, yes indeed; you can transform your buggy into a monster truck. Order the Kyosho HiRider Vette manual from your local hobby shop. It will provide assembly instructions and all the info you need on which rims, tires and body mounts are required for the monster truck transformation. You can also get the Vette body and faux V8 motor if these turn you on, but any other aftermarket body will work as well. Also, be sure to use the same size pinion gear as the Tracker, or your new monster machine will be very hard on your battery and motor.

Pete

Restless Rustler

I have a Traxxas Rustler that I run with a Trinity Midnight motor and Tekin Rebel speed control. I want my truck to go faster. My dealer suggested that I try gearing it differently, so I tried a bunch of different pinion

and spur gears. Some made my truck faster; others slower. Which gear would make my truck fastest?

ROBERT CONWAY
Morristown, NJ

Robert, a stock motor can make your car go only so fast. Now that you have all those gear sets lying around, try this: first, reinstall the original spur gear. Next, find a pinion that is two teeth smaller than stock, and install it on a new machine-wound modified motor. I like Trinity's Gem series motors; these cost only about two lawn mowings and have adjustable timing, and you can rebuild 'em. Try their Sapphire—a 17-turn motor that should make you very happy with its speed. Have fun.

Pete

Where's the RC10B4?

Thank you for putting out such an informative magazine. I'm a loyal Associated driver and really enjoy putting all my racing buddies—all of whom drive Losi vehicles—in their places. The only problem, though, is that my Losi friends have all jumped aboard the 4WD bandwagon, and I'm now being pushed around by Double-X4s and Street Weapons. Associated recently released the new B3 and T3, but why don't they make a 4WD off-road car that can be converted into a touring car like the XX4s? Do you guys know whether Associated plans to release such a car? I'm starting to get the 4WD itch, but I would like to remain loyal to Associated.

FRED R. PRINCIPE
Newton, NJ

Well, Fred, you're not the only one who would like to see Associated produce a 4WD vehicle, and I'm certain that Associated has pondered the idea. We've also heard rumors that they are indeed producing such a car, but rumors don't hold much water, if you get my drift. I can promise you one thing, though; if Associated do announce that they will manufacture a 4WD vehicle, you'll hear about it first in *Car Action*. In the meantime, keep racing your Associated vehicles; maybe you'll soon add another vehicle to your stable of Associated racing cars.

G-Man

Which is Better: the Best or the Greatest?

I recently read your "Budget FM Radio Guide" and bought a Futaba 3PDE. I want to buy an ESC for my Losi Double-XT 'CR' but I can't decide between the Tekin G9 Super Sonic and LRP's IPC unit. What do you think?

COREY ADAMS
Spokane, WA

Corey, buy the one that matches your paint job. If you're willing to spend that much money on an ESC, you'll have a hard time finding one that would disappoint you. The same goes for all you guys who write in to ask whether we think you should buy this highly respected product over that highly respected product. We are very lucky to have so much good stuff in the R/C market today. Follow your heart and buy what turns you on. You won't be disappointed; I promise.

Pete

issue was great. You mentioned your fondness for the car, but you have yet to write a "Project Report" or "Second Look" on this outstanding vehicle. Is a follow-up on the GTO in the works? Your usual hop-up reviews are excellent. I look forward to another test.

I, too, own a GTO and I'm very pleased with it. It really is in a class of its own. With a stock Trinity X-Star, my GTO performs as well as my HPI RS4 Pro with a Maxtec 11-turn motor (in terms of speed). Do you know if HPI or any other manufacturer plans to release a similar-size 4WD mini electric sedan? I understand that the GTO is very popular on the West Coast, as far as sales are concerned. Keep up the great work; I wish you continued success.

STEVEN NUNEZ
Bronx, NY

Thank you for the kind words, Steve. You're right; I do have a special fondness for the Roadrunner GTO 962. It's the fastest 4WD road car I have ever driven. It also handles like a slot car and seems to defy the laws of gravity. I've considered revisiting the GTO, but I'm not sure it would have much appeal.

HPI has just released the Mini RS4 (electric), which looks very promising. We just ordered our Mini RS4, so expect to read a "Thrash Test" soon. Who knows? Maybe we'll do a shootout between these two awesome cars. I'll tell you this much, though: the HPI Mini RS4 will have some serious competition.

G-Man

WRITE TO US! We welcome your photos, drawings, comments and suggestions. Letters should be addressed to "Letters," Air Age Inc., Radio Control Car Action, 100 East Ridge, Ridgefield, CT 06877-4606. Letters may be edited for clarity and brevity, and each must include a full name and address or telephone number so that the identity of the sender can be verified. We regret that, owing to the tremendous numbers of letters we receive, we can't respond to every one.

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Love that GTO, but ...

Hello, George. Your review of the Roadrunner GTO 962 in the April '97

"Readers' Rides" is our way of recognizing the unique, innovative—and sometimes bizarre!—vehicles that our readers have created. Send us a sharp, uncluttered, well-exposed color photo of your car or truck (no Polaroids, please!), along with a brief description, to Readers' Rides, R/C Car Action, 100 East Ridge, Ridgefield, CT 06877-4606. If we choose to feature your creation, you'll receive a 6-month subscription to Car Action, or an extension of your existing subscription. You'll also be eligible for the seventh annual "Readers' Rides of the Year Contest" in the fall of 1998. The winner will be awarded \$500 and an assortment of electronic R/C equipment furnished by Novak Electronics Inc. Our second and third choices will also receive an assortment of Novak electronic R/C equipment. In case we need to contact you, write your address and phone number on your letter and on the back of every photo you send. Good luck!

Sedan Sensations

Mike Conway and his brother Rick Isi of San Rafael, CA, drive these sharp-looking HPI RS4s on Sundays at Jake's Performance Hobbies in Rohnert Park, CA. Both cars sport upgrades such as these new Corvette bodies (painted metallic red and Outlaw Black); Fantom modified motors; Tekin G12CIII speed controls; anodized-aluminum-alloy front knuckles; rear hub carriers; front and rear lower suspension mounts and suspension arms; swaybars; front and rear universals and ball bearings. Mike uses JR radio gear and super-narrow slicks on chrome wheels. Rick hits the parking lot with Airtronics radio equipment and has added narrow low-profile super radials on S-spoke wheels.

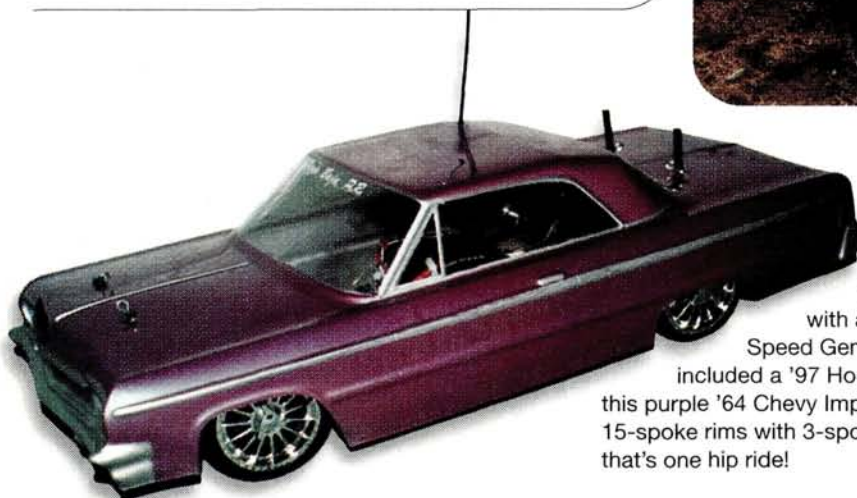


Four-Wheelin' Fun

"It's one sweet ride," says Carl Anderson of Lake Havasu City, AZ, about his Losi XX-4. To make off-road action especially hot, Carl has equipped the buggy with a Tekin G-12 speed control, Litespeed 13-turn double and Trinity 15-turn quad motors, Pro-Match 1700 and 2000mAh batteries and MIP Gold shock shafts. His ride is controlled by an Airtronics Caliber radio system.

Competition's Worst Nightmare

Scott Abbott of Glide, OR, sent us photos of his Traxxas Rustler, which he has detailed with custom decals from Odyssey Graphics, handmade skull and flames and a fully functional light system. He equipped the truck with HPI Super Star wheels and Pro-Line tires. Scott powers the beast with a Tekin Formula 10 speed control and Buggyweld 13-turn double motor for racing (a Trinity Midnight for fun) and a Piranha 1400 7-cell hump battery pack.



Impressive Impala

Hiram Ortiz of Brooklyn, NY, equipped this HPI RS4 with a Novak Tempest Pro speed control and a Trinity Speed Gems Diamond 12-turn double motor. Although the kit included a '97 Honda Accord body, Hiram chose to replace it with this purple '64 Chevy Impala SS lid. He also added RPM Invader chrome 15-spoke rims with 3-spoke knock-offs and HPI's low-profile tires. Now, that's one hip ride!

Scaled-Down Racing Sedans

All the way from Frankfurt, Germany, Erwin Kruse sent us this photo of his and his sons' scale sedans. Included in the photo are (top to bottom): Associated's Dual Sport with Dodge Viper body, a GM Evo 12-turn double motor, Tekin G12 ESC and Futaba Magnum Jr. radio gear; a second Dual Sport with BMW body, Trinity 17-turn single motor, Novak 610 HRV ESC and Futaba Magnum Jr. radio; HPI's RS4 with GM Evo 12-turn double motor, LRP IPC ESC and Futaba Magnum Jr. radio gear; and another Dual Sport with a GM Evo 12-turn double motor, Novak 410 HPC ESC and Futaba PCM radio equipment. All four cars run with Futaba 9601 servos. Looks like a great racing fleet!



New to the Hobby Hauler

In search of a new hobby, John George of Cottage Grove, MN, came upon this Tamiya King Hauler. Once he had the kit together, he decided that it didn't have enough lights, so he added an electrical unit light set for the tractor and placed lights on the bumper, along the bottom of the running boards and along the sides and front. He also added eight amber lenses, one clear and one red lens, as well as backup lights on each side and on the back of the bumper. John uses cooling fans to bring more air to the motor and ESC and out-fitted the truck with full ball bearings, an air horn and much, much more. This project took quite some time, but John hopes his experience will make the next hauler come together a little more quickly.

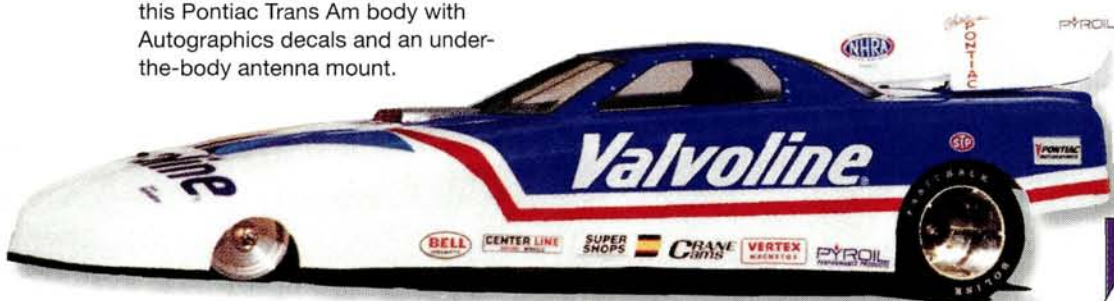
Hot Wheels

This Traxxas Nitro Stampede—sent to us by Brian Eber of Rochester, IN—sports mods including an MIP-tuned pipe, onboard temperature gauge and shock covers. Brian custom painted the Hot Wheels body because one of his other hobbies is collecting Hot Wheels; by combining the two, he created one of the largest and fastest Hot Wheels around.



Back-Straight Specialist

Chris Jones of Albuquerque, NM, races his Bolink funny car on the back straights of his local track with the ROAR Region 10 Association. The car houses a Trinity Opal 10-turn motor, a Trinity EX Spec 6-cell stick pack, a Tekin G-12 speed control, ball bearings on the front O-ring wheels and an Airtronics servo. Fastrack rear tires get the "go" into the ground and a Futaba Magnum AM radio keeps everything under control. Chris topped the car off with this Pontiac Trans Am body with Autographics decals and an under-the-body antenna mount.



NOVAK
ELECTRONICS, INC. RACING TEAM



If you have a technical problem that your hobby shop or racing friends can't resolve, give us a shout at Radio Control Car Action, and we'll see if we can chase down an answer for you. Questions should be of a technical nature and should be addressed to Troubleshooting, Radio Control Car Action, 100 East Ridge, Ridgefield CT 06877-4606. We regret that, owing to the tremendous number of letters we receive, we can't respond to every one.

Auto-Start Blues

I've owned a Kyosho Nitro Thrasher for several years, and it has always run great. Last year, however, I upgraded by buying a KO Propo electric starter system for the O.S. CZ-R engine. After 20 to 25 starts, the pinion gear on the starter motor snapped. Since then, I've replaced the gears three times, and it still breaks almost immediately when I try to start it. The motor is still stock, with the exception of a DuraTrax extra large heat sink head. Is there something wrong with my starter, or is there a way to fix it?

CASEY YEAGER

Bellvue IA

Casey, it's no fun spending money on what you think will be an upgrade to make your ride more fun and, instead, finding that you've screwed up what used to be a totally reliable truck. I feel your pain, having been there more than once myself. Still, I think you can get things back to where they should be. First make sure your engine is not flooded. A flooded engine will make the starter work much harder, which can cause stripped gears. Next remove the electric starter assembly and go back to the stock starter setup. Run the truck a few times, and see how things go. Do the gears seem to work properly? Is there any binding in the drive train? Do you hear any whining or grinding noises? If you do, isolate the problem and replace the bent shaft, worn gear, or bearing. If you don't, that's good news because the engine's crankshaft isn't bent, and there's no permanent damage to the driveline. It's possible that when installing the DuraTrax heat-sink head, you decreased the squish area and raised the compression to where the starter motor can't easily turn the crank. That could also explain the hard starting and the worn gears. If everything else checks out, try adding a copper head gasket or two under the head to cut compression, and see if that does the trick.

If everything in the drive train checks out, then the trouble is indeed with the electric starter, and it's most likely due to a bent shaft on the electric motor or a reduction gear. Hook the motor up to a low-voltage source like a 4-cell pack, and see if you can spot the wiggling shaft or gear. If you can, the folks at KO can tell you how to get your starter repaired.



Discharge Before you Race

I am a beginner in the world of R/C racing, and I have a question. My friends say that I need to have a cell discharger to race and that I should either make my own or buy one. Since I don't even know what a cell discharger is, let alone know how to make one, could you please explain what it is and tell me whether I really need one? Thanks!

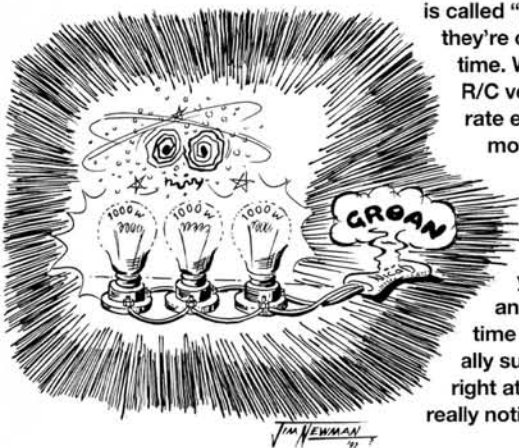
DUSTIN KOVACS

Flagstaff, AZ

Dustin, your friends are probably correct: no matter what kind of racing you're getting into, you'll need to properly maintain your equipment. That means using the right tools, following a regular maintenance schedule for cleaning motors, bearings and tires, and properly discharging your batteries after use. Ni-Cd cells develop what is called "memory," based on the way that they're charged and discharged over time. When batteries are used in your R/C vehicle, they are discharged at a rate equal to the load placed on your motor, and they become accustomed to that rate. For instance, if you run your packs for 4 or 5 minutes (until the end of your heat or Main), yank the pack, toss it in the box, and then just recharge it the next time you race, your packs will eventually suffer a substantial voltage drop right at the 4- or 5-minute mark. You'll really notice this if you go to a stronger

stock or mild modified motor because the car's performance will flatten out after just a few minutes of running. The good news is that this is easy to avoid and simple to cure: just discharge your batteries at a rate that's equal to or greater than what they experience when running on the track, and they'll completely discharge all of their amperage after charging.

Bulb dischargers are common and inexpensive. They're constructed of a series of dual-element, automotive turn-signal bulbs that are wired in parallel. Just connect all of the negative poles with a piece of brass tube or square stock from the hobby shop, and do the same with the positive contacts and a second piece of brass. Solder some 12-gauge wire and alligator clips to the ends, and you're in business. Many hobby shops and catalog dealers sell bulb dischargers for less than \$30, sometimes in kit form with soldering instructions. Deans sell a kit and will also put it together for you if your soldering skills aren't up to the task. Their unit is contained within a nifty extruded-metal channel that protects the bulbs from breakage and also makes a neat car stand. Several manufacturers now make solid-state, voltage-driven switching devices that are wired into the discharge circuit and will shut off the discharger when a preset voltage is reached. This prevents the cells from being damaged by over-discharging, which can cause a cell to reverse polarity. Never leave the discharger connected to your pack when you can't watch it, and always remove it when the lights start to dim. There are more sophisticated discharge devices and methods available, but this should hold you for now. If you don't have the cash to purchase a discharge device now, at least run your car or truck until it slows down considerably.





Problematic Peeling Paint

I'm having lots of trouble painting Lexan truck bodies. I got a new Traxxas Sledgehammer truck for Christmas the year before last, and my dad and I painted it transparent blue, using Pactra Lexan paint applied in three or four thin coats; I didn't back it up with anything. When I crashed the truck, the body cracked into pieces. The next body was a Parma Dodge Ram on which I used Testors' model paint; the paint just about crumbled in your hand, and it all came off shortly after I started to run the truck. My third body was a Parma Blackfoot truck that I painted with white and red Pactra and backed up with silver; this one is holding up fine. Then, this past Christmas, I got a new truck. I wiped the body thoroughly with denatured alcohol, then painted it with the red and white Pactra paint that I used before. Now the paint is beginning to separate from the Lexan. What gives? It's very expensive to buy and paint all these bodies. I'd really like to paint one that won't crack, chip, or peel. Any help you can give me would be appreciated.

DOUG JACOBS

Wooster, OH



TIM NEWMAN '97

Wow, what a litany of painting problems, Doug! I guess that your first body was probably painted properly but that it succumbed to what sounds like "Lexanfreezatsis"—a condition that affects thin, molded polycarbonate (like your new truck body) that has been subjected to very cold temperatures (like in Ohio just after Christmas) and then bashed around a few times. It will crack and split, just like yours did. You've already discovered that it's a bad idea to use anything except paint made for Lexan, so we won't go into that. Your third attempt probably survived because you painted it when the weather was warm and dry—ideal for curing lacquer-type paints. It allows the solvents that carry the paint pigments to partially dissolve a little of the inner Lexan surface so that it grips it very tightly, even under impact. When you got your new truck, the cycle started again: the cold, damp January weather prevented the paint from curing properly, and now it has started to flake off in corners and where you've taken a few whacks.

Let's review some general painting procedures. First, thoroughly clean the body inside and out. You mentioned denatured alcohol, but I prefer good old hot water and dishwashing detergent, especially a grease-cutter like Joy or Palmolive. I wash the body inside and outside twice in the kitchen sink with a sponge and rinse well both times. That removes all the silicone release agent that was sprayed onto the Lexan when it was vacuum-molded; this silicone is what can cause the paint to run and drip. Be sure to wash and dry your hands, too, because oil from your fingers can cause as much trouble as the silicone. After masking the windows and the design on the inside, protect the outside of the body with plastic wrap so that overspray doesn't mess up the exterior. Apply the paint in thin coats until you get the desired color buildup, and be sure you back the finished job with white or silver so that the lighter colors really pop out in contrast with the darker shades. Good luck!



Tune To Turn

I'm new to R/C racing, and I need to know the ideal setup so that my turning radius will be small and tight. I drive a Tamiya TA02 FWD with either an Acto Power or a Dyno Tuned motor and a Tempest ESC. My turning radius is big and too wide, especially when I approach a corner at high speed. Even if I apply the brakes very early, I frequently crash into the outside turn barriers. How embarrassing! I've been told that suspension setup plays a major role in proper handling, but what's the best combination for my car? At

TIM NEWMAN '97

the moment, I use the springs and damper oil that came with the kit with two spacers up front (one thick, one thin) and none on the rear. Please help; I have races coming up, and I don't want to make a fool of myself while I lose time on the track. I'm desperate!

RIZAL

via email

Rizal, there's no such thing as the perfect setup for every track, but I can give you some guidelines to get you started. Understand that a FWD car needs to have less traction in the back than up front so that the rear will follow the turn as it is initiated by the wheels that steer and pull at the same time. If the rear suspension is very soft, that won't happen, and you'll spend your time on the track plowing through turn after turn at slow speed. Really fast FWD guys set their cars up so that the back end starts to slide around at just the right time, as the front wheels

power through the apex of the turn—awesome to watch!

Pick up some good-quality, name-brand silicone shock fluid from a company like Associated or Trinity in 40, 60 and 80WT ratings. While you're at it, get a set of Tamiya's excellent, color-coded shock springs. These come in three ratings, from soft to very hard, and along with your stock springs, they should give you plenty of range to work with. Dig out the shock parts you didn't use when you put your car together because sometimes, you'll need to use different pistons on the ends of the car. Start with yellow front springs, 40WT oil and one-hole pistons up front. Out back, go with blue springs, 60WT oil and one-hole pistons. If the car still won't turn the way you want it to, try 80WT oil. If it turns too easily, put the red springs in the front and up the shock fluid to 60WT. These settings should get you in the ballpark on almost any track, but you'll have to fine-tune things yourself. Remember that a stiffer suspension usually means less traction and a softer one usually means more, but what you're really searching for is the "sweet spot" in the suspension that makes your car turn without dragging or bogging down. This will be different for you than for any other driver because we all have unique driving styles. Use the spacers to set the correct ride height, not to "stiffen" the springs, as the only way you can change spring rate is to change the springs themselves. The front of the chassis should be just a smidge lower than the rear.

Take notes on the suspension changes you've made and include surface, temperature, gearing, body style, results, etc., so that you can go back to the last setting if your latest experiment didn't pan out. That's what all the fast guys do, and it seems to work for them!



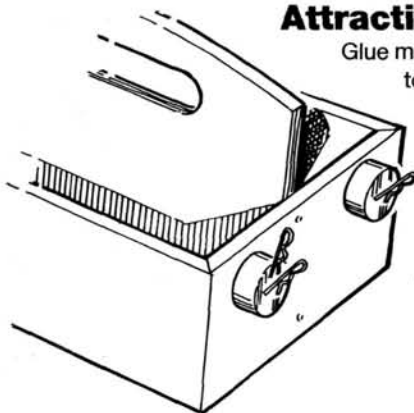
PIT TIPS

by Jim Newman

Attractive Box

Glue magnets to your pit box to hold body clips so they won't be knocked into the dirt and become lost.

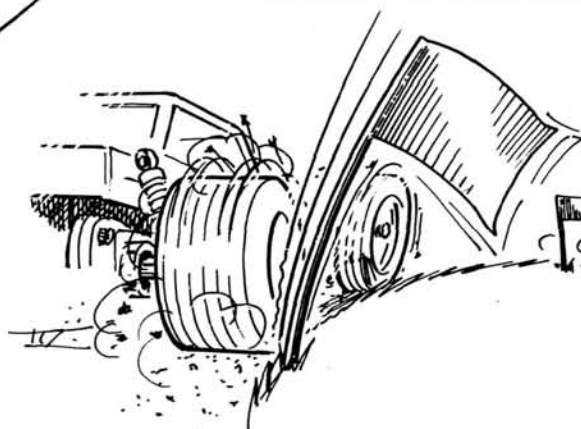
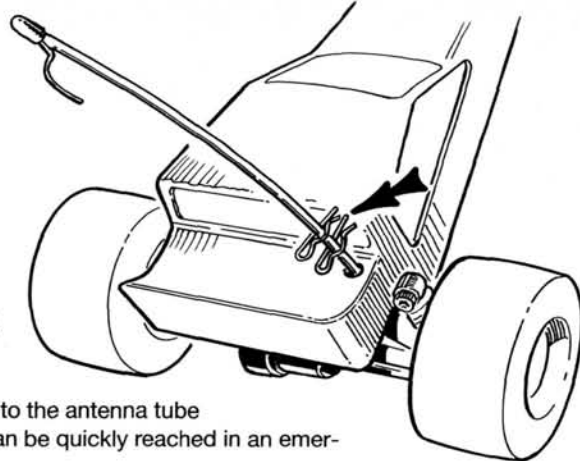
ADAM MITCHELL,
Whitby, Ontario,
Canada



Clip Tip

Snap a couple of spare body clips onto the antenna tube where they can be quickly reached in an emergency.

CAMERON ZONFRILLI, South Orange, NJ



Flag Waver

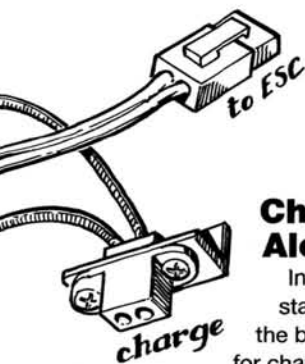
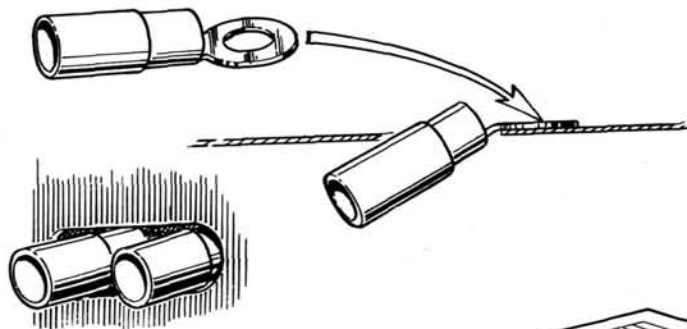
Small flags are an inexpensive way to make a track that won't damage the cars. Buy bundles of them from hardware stores, or make them out of craft-store cane and colored plastic snipped from supermarket bags.

COREY GOESSLING, Waterloo, IL

Fake It

Make fake exhaust pipes from crimp-style electrical eyelets. Bend the eye and glue it to the inside of the body so the tube part sticks out through a hole in the body. Four pipes per side look really sharp!

CHRIS MCREYNOLDS,
Baton Rouge, LA



Charging Along

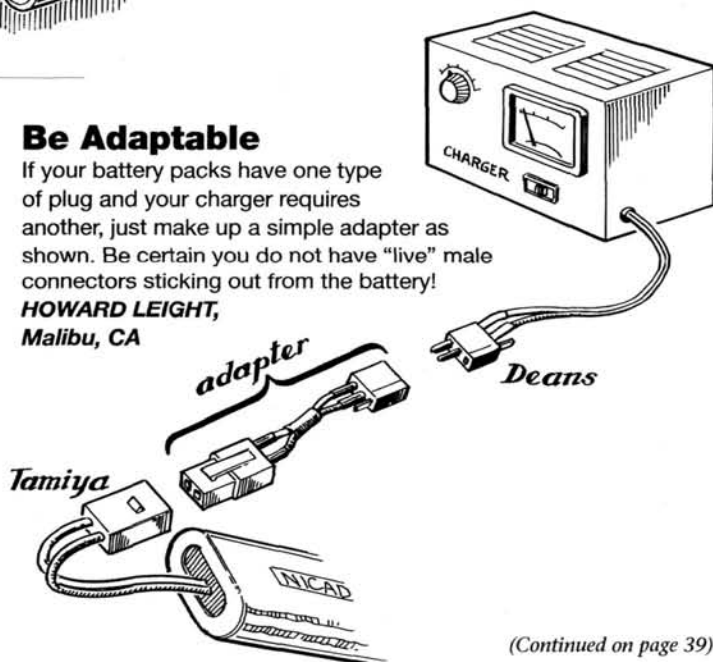
Instead of constantly removing the battery pack for charging, simply connect a charging socket as shown and mount it on the side of the chassis where it is readily accessible. Let the pack cool down before recharging.

CURTIS BROOKS, N. Las Vegas, NV

Be Adaptable

If your battery packs have one type of plug and your charger requires another, just make up a simple adapter as shown. Be certain you do not have "live" male connectors sticking out from the battery!

HOWARD LEIGHT,
Malibu, CA



(Continued on page 39)



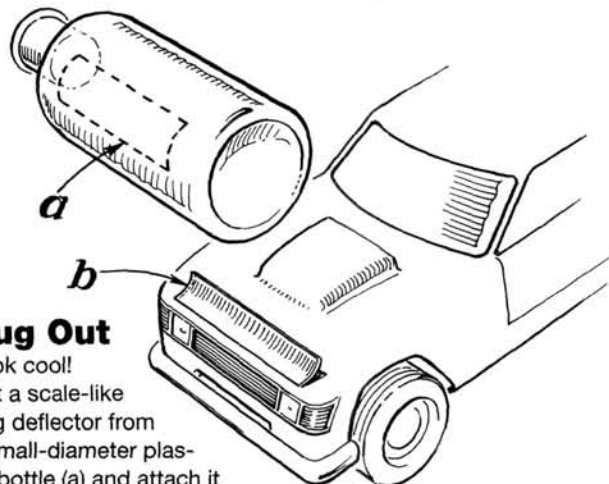
(Continued from page 36)



Recycled Caps

Spray-can caps are useful. Set the motor in one to dry after cleanup; set your shock bodies in the trough between the inner and outer cap while you are working on them, or set the shock bodies on the inner rim while the oil drains into the trough.

MIKE OLDERSHAW,
Bakersfield, CA



Bug Out

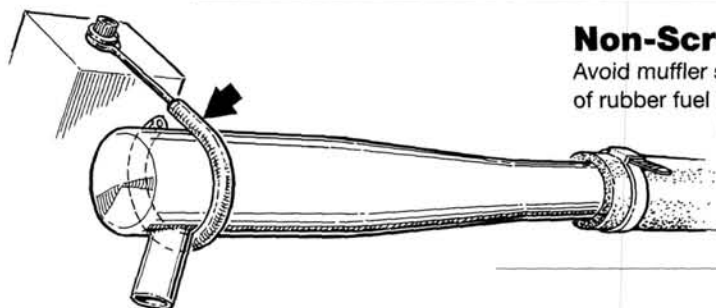
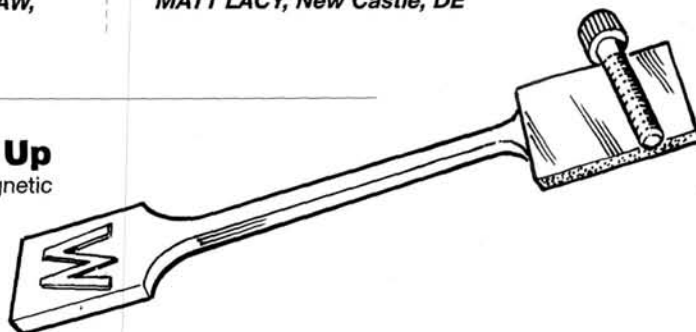
Look cool!
Cut a scale-like bug deflector from a small-diameter plastic bottle (a) and attach it to the front of the hood (b) with glue or double-stick tape.

MATT LACY, New Castle, DE

Magnetic Pick Up

Glue a short piece of magnetic material to the end of a coffee stirrer. With this, you can quickly pick up screws, washers, etc. that drop into the car.

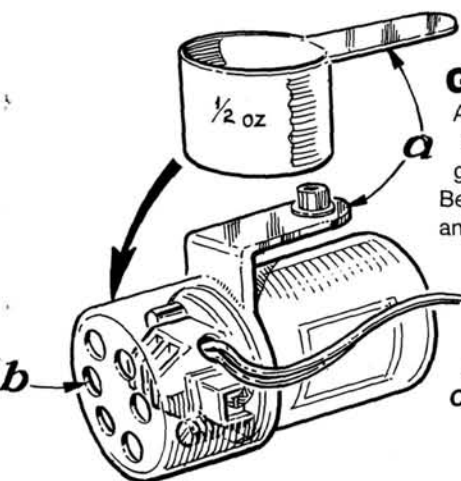
PAUL MCEUCHERON,
Sterling Heights, MI



Non-Scratch

Avoid muffler scratches by slipping a piece of rubber fuel line over the wire muffler-support clip.

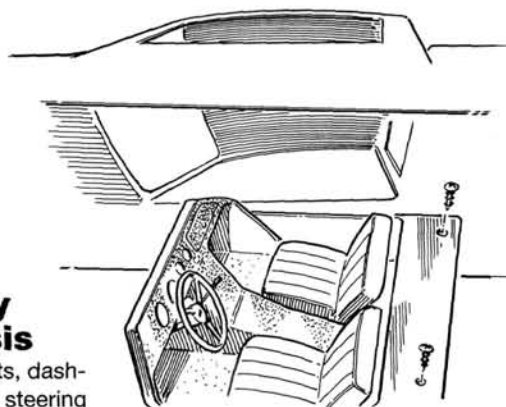
SHAWN FERGUSON,
S. Lake Tahoe, CA



Get the Scoop

A plastic scoop can be effective in keeping stones and grit out of a motor's endbell. Bend the handle (a) as shown and use a screw to attach it to a convenient part of the car. Drilled holes (b) vent the brush hardware.

JOSH PRYMAK,
Clarksburg, PA



Classy Chassis

Install seats, dashboard and steering wheel in the tub of your chassis. When you display your car, it will really "wow" the crowd!

DEYOUNG WILLIAMS, Bakersfield, CA

Radio Control Car Action will give a one-year subscription (or one-year renewal if you already subscribe) for each idea used in "Pit Tips." Send a rough sketch to Jim Newman, c/o Radio Control Car Action, 100 East Ridge, Ridgefield, CT 06877-4606. BE SURE YOUR NAME AND ADDRESS ARE CLEARLY PRINTED ON EACH SKETCH, PHOTO AND NOTE YOU SUBMIT. We're unable to publish many good tips because we don't have the sender's name and address. Please note: because of the number of ideas we receive, we can neither acknowledge every one, nor can we return unused material.



Mechanical Speed Control Basics

With all of the emphasis placed on racing, it's easy to forget that many folks who enjoy this hobby are backyard bashers or recreational drivers. Instead of an electronic speed control, many of their cars and trucks utilize a mechanical speed control (MSC)—a simple set of switches and resistors to control the speed of the

vehicle. All too often we assume that owners will use this speed control for only a short period of time, graduating to a more expensive electronic throttle when

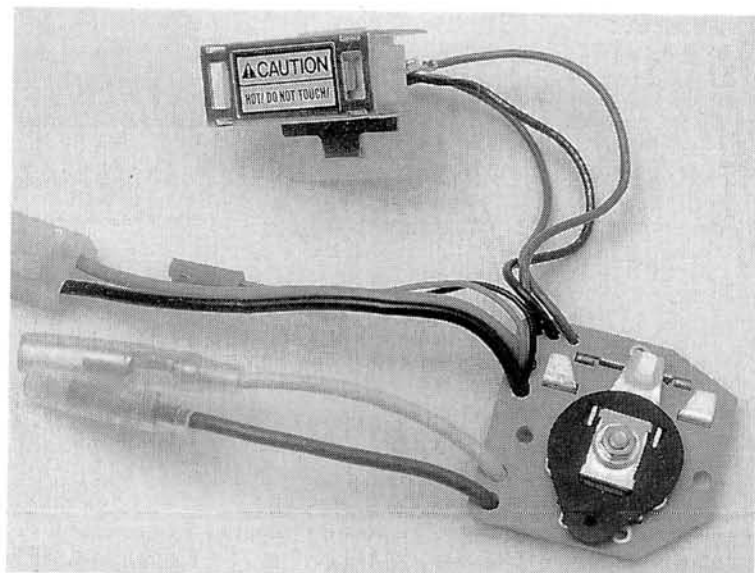
their mechanical unit requires maintenance or repair. That's not necessarily the case. It's not unusual to find mechanical units that have seen years of use, but that have required little, if any, hardware replacement or major surgery. While not the most efficient way to control the current that reaches the motor (at slower speeds, energy is literally burned away by the resistor), MSCs are inexpensive, ubiquitous and pretty robust.

Like any device, though, even a well-

A wiper control has the resistor wires wound around a ceramic barrel so that the wiper arm contacts them directly. No circuit board, no linkage, but usually no reverse, either.

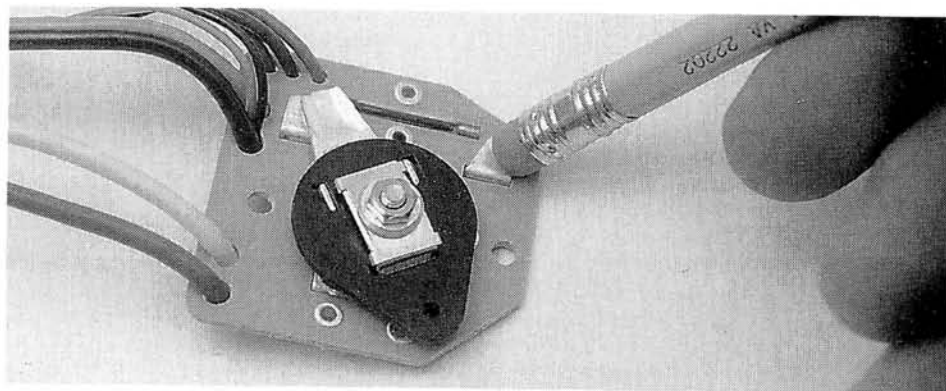
designed mechanical speed control will develop wear patterns and oxidation over time. With a little maintenance, however, you can prolong the life of your MSC and keep it working properly in the bargain. Following are a few tips on how to keep your MSC in top shape.

This 3-step speed control is typical of Tamiya kits. The wiper is moved across the circuit board by linkage connected to the servo horn.



CLEANING

Because the wiper and contacts are made of conductive materials, it's important to keep them as clean and free of oxidation as possible. The best tool for this is the eraser end of a pencil. Swipe the circuit board contacts or the exposed resistor wires lightly every month or so until they're shiny again. Badly pitted contacts resulting from abuse and neglect can be reclaimed by sanding very carefully with 600-grit wet/dry sandpaper (don't apply



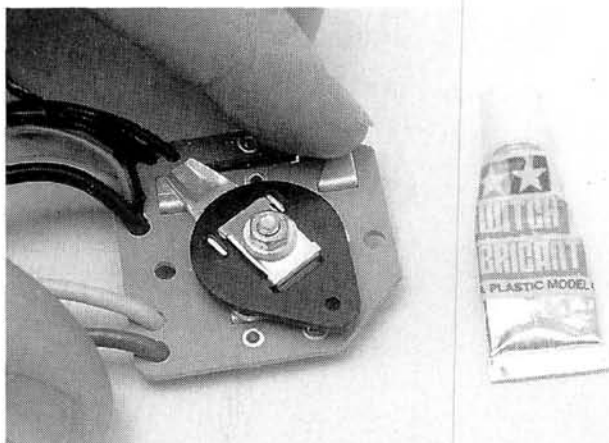
too much pressure). Next polish the contacts with the eraser tip. Ultimately, your MSC will have to be replaced due to worn contacts (they'll wear so

much that they will no longer maintain a solid circuit), so the more you keep the contact surfaces clean and free of pits, the longer the MSC will last.

Use a pencil eraser to periodically clean the wiper and contacts for better conductivity.

LUBRICATION

Once your unit has been cleaned and properly adjusted, it's a good idea to rub a small amount of speed control lube onto the contact areas. I've found Tamiya* speed control lubricant easiest to locate and as good as any other product I've tried. Tamiya includes a small tube of lubricant with every kit and replacement MSC assembly sold; it's easily enough to last the life of the switches and contacts.



After cleaning, apply a little switch lube to keep the contacts from pitting.



Adjust the radio and linkage so that the car or truck won't move when the throttle is in neutral. The wiper shouldn't go past the end of the last contact at full speed.

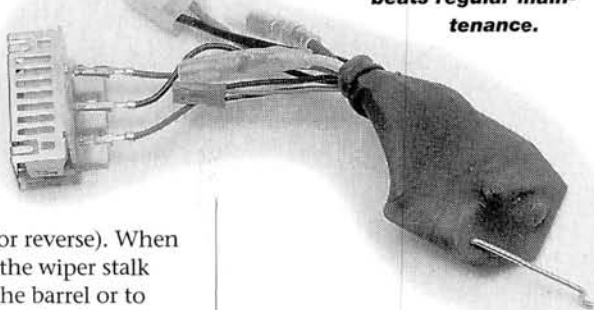
ADJUSTMENT

This requires an understanding of the leverage relationship between servo horn and wiper stalk and the throttle channel adjustments provided by your particular radio. When the throttle is in neutral, the wiper must be positioned to reside in the neutral portion of the MSC. On a 3-step unit, that's in the center of the circuit board; on a wiper-type unit, it's at the extreme end of the barrel, in a dead zone with no exposed resistor wire (unlike multiple contact designs, wiper-type controls seldom have provision for reverse). When the throttle is pulled all the way, the wiper stalk should only move to the end of the barrel or to the third contact on the circuit board without overshooting the end. That's why it's important to use the proper hole in the servo horn, especially on low-end radios without throttle travel adjustments. The leverage relationship is the only means of providing the correct travel length. Mid-level and high-end radios, however, often incorporate some throttle travel adjustment that allows the owner to set these positions very precisely.

PROTECTION

How can you protect your nice, clean, adjusted and lubricated MSC? Kyosho* attempted to resolve this problem by containing the circuit board within a hard plastic disk-shaped case. This works well for a while, but ultimately, dirt, sand, or grit finds its way between the edges of the case. Tamiya supplied owners with a shaped, balloon-type rubber cover that kept most of the dreck out of the works, but lately they're using a vacuum-formed Lexan cover to stop rocks and grit from finding their way into the circuit. No matter what system you use (and some prefer no protection at all), nothing will allow you to ignore MSC

Lexan covers or balloons will keep the big crud out of your speed control, but nothing beats regular maintenance.

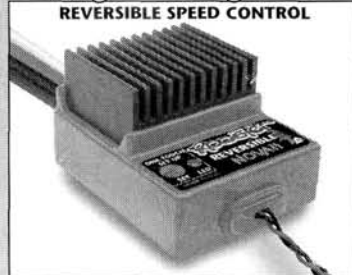


maintenance forever. Sooner or later, you'll have to pull out the rag, the pencil eraser, and the lube. Still, five minutes of maintenance every month or so beats the high cost of an electric speed control—right? ■

N TEAM SECRETS

Rooster

REVERSIBLE SPEED CONTROL



Rooster Receives 4 New Features

Novak Electronics has recently given the Rooster a technological boost by adding four, new significant features to their most popular reversible speed control.

A long-time favorite among R/C fans who enjoy the fun and flexibility of reverse, the Rooster now includes the following Novak-exclusive features:

• Smart Braking

Slows the vehicle to a safe speed before reversing. Over time, this helps prevent damage to the vehicle's gearbox and reduces ESC heating.

• Reverse Disable

Allows the vehicle to be programmed for forward and brake only.

• Polar Drive

Enables the speed control to handle hotter motors while operating exceptionally cool. It also provides the smoothest throttle response and improved radio system performance.

• Built-in Brake Light Circuitry

Gives vehicles a more realistic appearance when used with Novak's Brake Light LED Kit, which is sold separately.

Like all Novak products since October 1, 1997, the Rooster has been updated with a 120-day warranty.

NOVAK ELECTRONICS, INC.
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Advertisement

TS# 47



by George M. Gonzalez

Tamiya Concours Nationals

EVERY YEAR, Tamiya America* holds its national championships at their facility in beautiful Aliso Viejo, CA. The three lucky (uhhh ... I mean talented) winners in the 4WD, FWD and F1 classes qualify to race against the top European and Japanese drivers at the Tamiya World Championships in Japan. The best part, however, is that Tamiya picks up the tab, and the lucky winners get to travel to exotic Japan absolutely free of charge!

During the nationals, a truly colorful concours event is held. The concours winners don't get a trip to Japan, but they do get the next best thing: an appearance—with their cars—in *R/C Car Action*. We'd like to dedicate this edition of Concours Corner to the concours winners at the '97 Tamiya Nationals.

Four-wheel-drive-class winner Fernando Salas of Garden Grove, CA, stole the show for the second



Fernando Salas' winning 4WD car.



Bill Dunbar's winning FWD sedan.

The concours winners and their cars, left to right: Fernando Salas (4WD), Bill Dunbar (FWD), Louie Patterelli (M-chassis), Dan Munoz (M-chassis), and Marty Hageman (F1).



Dan Munoz' M-chassis winner.

year in a row with his completely detailed Tamiya Kure Nismo GT-R Skyline. Fernando chose his own custom paint scheme

but used most of the proper sponsor logos to create his own design. Inside, you'll find a complete interior with driver and navigator. The two-man team is protected by a full-cage roll bar that's equipped with a video camera and a fire extinguisher. The navigator has his own laptop computer and is holding a map. The roof has an unpainted viewing area so spectators can better appreciate the interior details. Exterior details include running lights and flashers; antenna; windshield wipers; and wheels equipped with disc-brake rotors. Fernando raced the very same body in six gruel-

ing heats. Fernando is a talented driver, so his car survived the event and suffered only minimal damage. As you can see by the photos, Fernando put a lot of time into his creation, and it has paid off.

FWD-class winner Bill Dunbar of San Diego, CA, won this class with his expertly painted Tamiya Honda PIAA Accord V-Tec body. Bill chose the Castrol Accord racing theme and hand-painted most of the sponsor logos and graphics. Bill's car also featured a completely detailed interior, as well. After the concours judging, Bill raced his concours-winning body in the event, and the car took a serious pounding. Afterwards, he gave the body to one of the younger racers who had also competed in the event.

Dan Munoz of Los Angeles, CA, and Louie Patterelli of Port St. Lucie, FL, tied in the M-chassis class. Munoz's



Tamiya Volkswagen Beetle immediately captured the hearts of the judges and spectators alike. Those of you who remember "Herbie" from Walt Disney's "The Love Bug" movies will also appreciate Munoz's hard work and attention to detail. The Tamiya VW Beetle is very detailed right out of the box, but he added many interior and exterior features in order to bring Herbie to life in 1/10 scale. Interior features include: front-bucket seats and rear bench seat; driver figure with helmet, gloves and crash suit; complete dashboard with steering wheel, gauges, radio, ash-tray and ignition keys; full-cage roll bar; rearview mirror; stick shift and

hand brake; and gas, clutch and brake pedals. Exterior features include custom-made racing stripes and no. 53 decals; functioning rag-top and custom-molded door handles. Dan also added plastic VW emblems, windshield wipers and front headlights (borrowed from his Tamiya Blitzer Beetle) to complete his masterpiece.

Louie Patterelli really went nuts with his



Louie Patterelli's
M-chassis winner.

Tamiya Eunos/Miata Roadster. He chose a Hot Wheels paint scheme and chopped off the top of the car to make it a convertible. The car's interior features a driver figure and tons of other details. As you can see by the photos, Patterelli spared no expense preparing his

car for concours judging. No wonder the judges couldn't decide between these two entries!

F1-class winner Marty Hageman of Mequon, WI, had the hands-down, most highly detailed entry at the event: an F1 diorama. At first glance, you would think this was

"I would like to thank Mike Reedy for giving me...

...THE FASTEST MOTORS



Masami's Top Qualifying

RC10B3

Masami Hirose and Reedy Modifieds:

•Top Qualifier, 2WD •Top Qualifier, 4WD
and IFMAR '97 4WD World Champion

REEDY
Modifieds
18

Everybody Else
COMBINED:

9

KNOW THE REAL SCORE...

Reedy Modifieds have powered 18 World Champions...
More than all the other motor manufacturers combined!

one of Tamiya's plastic static models—not a functioning R/C car. Marty found the 1/10-scale pit crew when he was traveling in Japan. Some of the

tools came with the pit-crew set, but Marty handcrafted many additional tools to create the diorama. If you look carefully, you can see the exposed

disk-brake rotors and cooling intakes. I personally like the tire rack and the over-

head compressed-air gun. Marty claims that the car actually runs, but the judges didn't make him drive it at the event. Naturally, Marty raced another car at the nationals; some cars are just too cool to mess up!

The judges at the Tamiya Nationals did a fine job of picking the winning cars in each category. Judging a concours event is not an easy task,

especially when there are so many worthy competitors. The fact that Tamiya R/C cars are extremely detailed right out of the box only makes it more difficult to judge among them. For this reason, the judges looked for attention to detail and unique (read: time-consuming) paint schemes. We congratulate all the winners for their fine achievements. Until next time

*Addresses are listed alphabetically in the Index of Manufacturers on page 248. ■



Tamiya's concours judges didn't have an easy job. Fred Medel takes a close look at Bill Dunbar's FWD entry, while Eric Sands takes notes and Dave Jun supervises.



The Old Spice crew wrench on their F1 contender as Herbie speeds past!

IN THE WORLDS!"

Reedy Modifieds powered Masami Hirosaka's new RC10B3 to Top Qualifier Honors, turning the FASTEST LAPS of any 2WD car. And, Reedy Motors took Masami's Yokomo MX4 to Top Qualifying Honors in 4WD before powering away from the rest of the field to capture the 1997 IFMAR 4WD World Championship! In fact, Reedy Motors were in twice as many cars in the 4WD A-Main as the next leading brand of motor!

-Masami Hirosaka,
at the World's Award Banquet



REEDY Modifieds

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Need to know what's new? What works well and what doesn't? This section is devoted to objective reviews of all R/C car accessory items. From gears and wrenches to motor brushes and shock springs; if you can use it with your R/C vehicle, you'll find it critiqued on these pages.



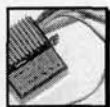
55
Kawada
Lexus



58
MRC
Super Brain



58
Performance
Hobby Wheel
Balancing
Lead Tape



62
Hitec
SP-520 ESC

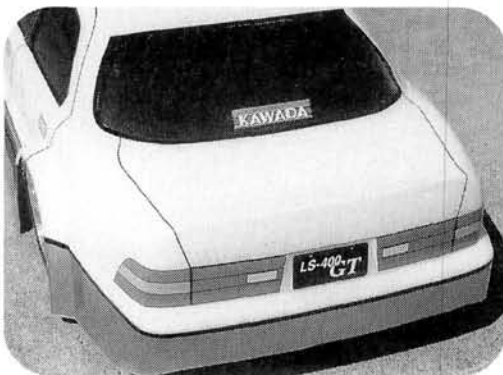


62
Protoform '97
DS Camaro

KAWADA Lexus LUXURY ACCOMMODATIONS FOR YOUR CHASSIS

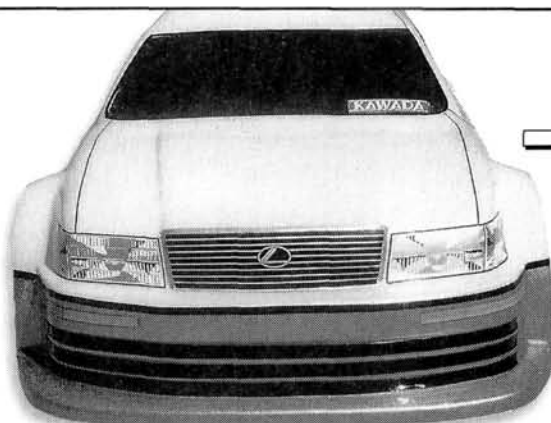
IF YOU'RE LOOKING for a body that is a bit different from the rest of the crowd, then check out Kawada's* newest entry in the touring car scene; the Lexus LS400GT (part no. TU-60) is sure to be a standout wherever it might show up.

The shell is formed from .040 Lexan—the standard weight for most R/C bodies. Its rugged construction should be able to handle "bargin' the boards" at the parking lot circuit without going to pieces. Very nice detail lines molded into the shell add to the scale-like appearance, and a protective



The decal sheet includes headlights, taillights, license plate and window moldings. The decals are a real nice bonus and add that extra touch of realism to the body.

You'll be cruisin' in style with this beautiful Lexus sedan from Kawada. The flared wheel wells and lowered ground effects add a nice custom look.



It's the grille that kills! The front end of this car says, "Move over!" There's plenty of room under the nose for forward-mounted transmissions and motors.

plastic film covers the body to eliminate the need for overspray cleanup after painting. Many extras included in the set make it a great bargain: a separate rear wing; a neat sheet of decals featuring headlights, taillights, and window molding; even a pair of Lexus and Toyota logos for the grill work. The body will accommodate cars with a 10 1/2-inch wheelbase and a width of 8 inches or 200 millimeters; that's ideal for most sedans, and Associated Dual Sport owners will also be happy to hear that this shell fits the DS chassis like a glove!

Kawada's Lexus LS400GT gets the big thumbs up from me. I have only one complaint: the graphics are impressive and are printed in full color on flexible Mylar, but require care in application. The adhesive is not very forgiving, and attempts to pull the decals off and reapply them will not meet with good results; in addition, the relatively inflexible Mylar does not conform to complex curves as well as the stretchier vinyl decals used by some other manufacturers. Take your time when putting on the graphics—when properly applied, they really bring the Lexus LS400GT body to life!

—Kevin Meyer



PHOTOS BY KEVIN MEYER

MRC Super Brain 809

MEET YOUR CELLS'
MAXIMUM CAPACITY

YOU'RE JUST GETTING started in the hobby, and you don't want to spend a fortune on a top-of-the-line AC/DC peak charger. Or, you're thinking about a new charger because your old one dates from 1983, and you think it's time to upgrade. Well, enter MRC's* new Super Brain 809 Delta Peak AC/DC quick charger. I got my hands on one when it came time to charge up my cells and run my MRC Hammerhead, and I was pleased with its performance.

This alternative to more expensive AC/DC peak chargers offers 2A and 4A charge modes, charging for 7.2V and 8.4V packs, fuzzy-logic intelligence (an included microprocessor adjusts the charging current to the battery pack's condition and monitors the charge level for maximum capacity charge), and an automatic, two-hour trickle charge mode so you won't zoom too much power into your pack too quickly.

But how did it work? Simple. The pre-production charger I



received from MRC included only an AC input (although production units have a DC input, as well), so I plugged the charger into the wall, clipped on the battery pack, pushed "select" to choose the appropriate charge mode, pressed "start," and off it went. At the 2A rate, my pack was charged in under an hour, and I was ready to head out with the Hammerhead. If you're in a hurry, though, the 4A charge rate will take much less time. The Super Brain is capable of charging battery packs one after another; however, MRC notes that, when charging at 4 amps, you should let the charger cool for 10 minutes between charges.

The great thing about the Super Brain is that it's as practical and functional for trackside, mid-run charge-ups as it is for the occasional, pull-the-car-off-the-shelf, blow-off-the-dust, charge-and-go-R/C'er. The addition of the economical (\$49.95; part no. RB 809) and versatile Super Brain to your equipment arsenal will add life to your batteries and money to your pocket.

—Cynthia White

PHOTO BY WALTER SIDAS

PERFORMANCE HOBBY

Wheel Balancing Lead Tape

BALANCE = POWER

DON'T YOU ENVY that guy at the track whose car runs like a sewing machine? As his car motors down the straights, all you can hear is the fweeeeee of the motor and the hissing of the tires on the pavement. You can hold the car in your hand with the throttle pegged, and it doesn't even vibrate. How is this possible? My car didn't even do that when it was new!

The answer is: balance. Balance, Daniel-san! Oops, I slipped into Mr. Miyagi mode. Once again, our "scaled-down" cars reveal themselves to be just like their full-size cousins. If full-size car tires aren't balanced properly with lead

weights, you'll hear—and feel—the unmistakable woppita woppita woppita of the unbalanced wheel as you cruise down the highway. Efficiency is lost, traction is diminished, wear is increased and boy, is that sound annoying! On an R/C car, the effect is exactly the same. No one makes micro-size clamp-on rim weights, though, so what can you do?

What you want is some lead tape from Performance Hobby.* This stuff is very thin, very pliable adhesive-backed lead. Just peel and stick! Although it's easy to apply the tape, it can take some patience to find the perfect balance. A good balancer, such as those available from Top Flite or Trinity, is a definite plus; but in a pinch, you can use your car to balance your own wheels. Basically, all you have to do is to spin the wheel in question, let it come to a rest, and note which part of the wheel is at the bottom; that will be the heavy side. Just add tape to the inside of the rim opposite the heavy side until the wheel balances. Performance Hobby enclose complete instructions for on-car wheel balancing with their lead tape.

Once I got my wheels spinning like proverbial tops, I didn't have to mess with them again. The tape stuck well, didn't peel, fly off, migrate—nothing. One pack of tape is good for plenty of wheels, and it works just as well on big truck meats as it does with 1/12-scale foams; I even balanced my bicycle wheels with the stuff. Thanks to Performance Hobby, I've got my own sewing-machine car!

—Peter Vieira



PHOTOS BY PETER VIEIRA



At the tail end, Protoform has included some cool, blue-anodized hardware to mount on the rear spoiler. It's a nice finishing touch.

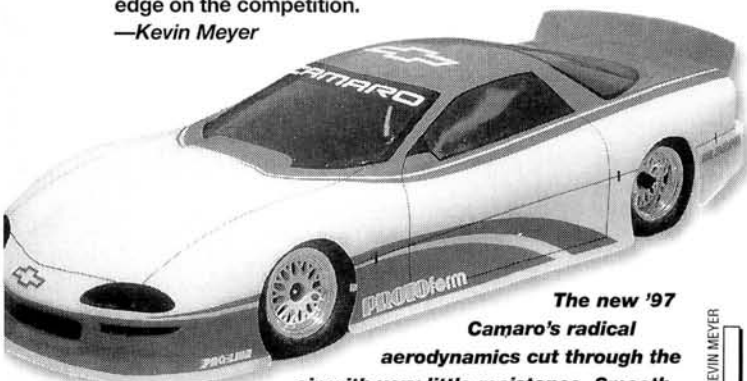
PROTOFORM '97 DS Camaro ONE CHIC CHEVY

IT WAS THE MUSCLE CAR of the '60s and '70s; every high-school kid's dream car. In fact, it has to be one of the most popular cars ever built. Protoform* keeps the spirit alive with this '97 Chevrolet Camaro (part no. 1411). With its clean, scale appearance, it will be a head turner and, no doubt, a popular body on the parking-lot scene. This is an accessory that will definitely add to your driving confidence.

On the track, this shell is a real spectacle when it glides through the corners. It's so realistic that you'll get the feeling you're at an actual SCCA Trans-Am event. I heard many positive comments on the new body. Molded-in "ground effects" make this car look extremely low! Besides its awesome style, there are other features that make the Protoform Camaro a winner, in my book. There are plenty of molded-in body lines to please even the most avid detailer. The shell is formed of .040, regular-weight Lexan, so it handled blows from the track's boards that would have shredded other cars' bodies. To make mounting easy, the front and rear wheel-well openings are molded into the shell. For extra downforce, a separate spoiler is included in the package. You also get distinctive-looking, blue-anodized hardware to use when you install the spoiler.

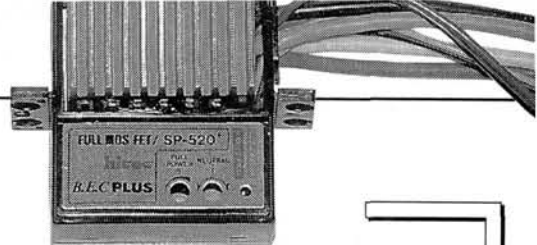
With all the aftermarket bodies flooding the market, it gets tougher all the time to decide on a cool-looking body. Protoform has helped narrow your choices. Superb aerodynamics will help you glide through that roadcourse and give you an edge on the competition.

—Kevin Meyer



The new '97 Camaro's radical aerodynamics cut through the air with very little resistance. Smooth lines and scale accuracy are the name of the game at Protoform; plenty of detail lines to satisfy even the most critical hobbyist.

PHOTOS BY KEVIN MEYER



HITEC SP-520 ESC

A RUGGED, RELIABLE, ENTRY-LEVEL SPEED CONTROL

UNFORTUNATELY, mechanical/wiper-type speed controls tend to wear out because of hard running, low maintenance and plain old wear and tear. These contact-style controller units eventually end up either burnt up or burnt out! If you're one of the many owners of vehicles such as Tamiya, Kyosho, etc., who is in need of a direct-fit replacement speed control, you might want to consider Hitec's* SP-520P electronic speed control. This MOSFET-equipped, forward/reverse ESC handles stock and mild modified motors and up to an 8.4V/7-cell battery pack.

The 520P comes with a Tamiya-style battery connector and bullet-style plugs for the motor's twin wire connectors. A large aluminum heat sink keeps the controller cool under fire, and 15-gauge wire is used on all four hookup leads. Hitec also includes an ESC setup screwdriver and motor capacitors, and the side-mounting "ears" can be removed so you may flat-mount the 520P.

My test of the SP-520P began on a stock Bolink Legends Coupe running a 6-cell, SCR1400 pack and a Trinity Midnight stock motor. The Hitec was hooked up with no trouble. A tiny LED lets you know when the Hitec is both on and at full throttle; after about two minutes' tweaking, the unit was set up and running great.

Overall, the 520P's operation was similar to that of most of the entry-level sport ESCs found on the R/C market today. I ran four packs through the Bolink without so much as a burp from the Hitec, and the large heat sink was barely hot. The built-in 0.45-second delay between forward and reverse prevented gear damage, and no excessive motor arc/sparking was noted, nor were there any radio glitches.

The final test control on the Hitec ESC was kind of off-the-wall. I hooked the unit up to my Kinetics Navy assault hovercraft that turns two big props on two strong 540 motors. During repeated runs on the dual-motor air-cushion vehicle, the 520P didn't even whimper!

So, between the Hitec's simple installation/setup and its ability to take punishment, this ESC should be high on the list of anyone who has the "wiper blues!"

—Rick Eyrich

Specifications

Weight : 2.6 oz.

Input voltage : 5 to 7 cells @ 1.2 volts/cell

On resistance : 0.012 ohm

BEC : 5.6 volts

Wire size : 15 gauge

List price : \$79.95

PHOTOS BY RICK EYRICH

*Addresses are listed alphabetically in the Index of Manufacturers on page 248.

New For '98

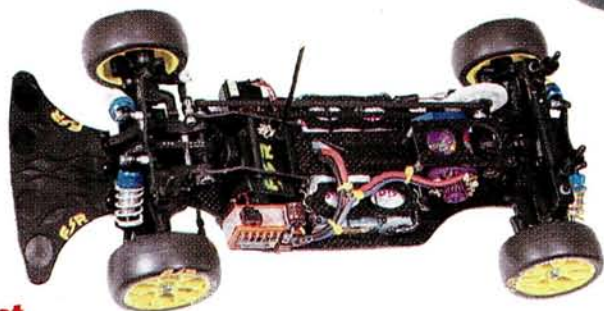
INSIDE SCOOP Special Edition

It's that time again. After 12 months of cocktail-napkin sketching, keyboard clicking, CAD CAM'ing, prototype machining and all-around brainstorming, the many manufacturers of the R/C car world are ready to unleash their 1998 products. We've scoured the new releases for the most useful, exciting and innovative items likely to turn up at your race-track or hobby store in '98, and we've laid them out for you to stare at impatiently. Rest assured, they're coming soon!

ORION 1700 Cells

Team Orion is quick out of the gate with their V-Max matched packs featuring the new Sanyo RC1700 cells. Co-developed with Reedy, the V-Max process boosts voltage without reducing run time, for a real racing advantage.

Distributed by Peak Performance; call for availability and pricing.



FSR Bullet

FSR recently entered the growing touring car market with a revolutionary new chassis. Officially called the Bullet, it only takes one look at this cool chassis to realize that this car is indeed deadly—deadly to its competition, that is. The Bullet is basically a scaled down 1/8-scale pan car and shares many features with its larger counterparts. Here's a quick list of the car's hot features: dual-level carbon fiber chassis plates; full ball bearings; twin ball differentials; ultra-efficient triple-belt drive system; special floating rear body mount; and a completely adjustable suspension. For the budget-minded, a sport version will be available soon, and you can also expect to see a nitro-power conversion kit.

Sorry, no pricing or part numbers were available at press time, but feel free to give FSR a call for more information.

FSR

Nitro Bullet

New from FSR (Full Speed Racing) is the 1/10-scale Nitro Bullet. As you probably have guessed, the NitroBullet is based on its electric brother; however, several design changes were made to accommodate the nitro powerplant. If you're familiar with 1/8-scale nitro-powered pan cars, you'll probably notice some striking similarities. With an extra thick aluminum chassis, twin ball diffs and completely adjustable suspension, the Nitro Bullet is designed for serious competition. Call FSR for more information.



SCHUMACHER

Side-Saddle Chassis for CAT 2000

This will be Schumacher's chassis of choice for the CAT '98, and it's also available as an upgrade for the CAT 2000 SE. Constructed of Schumacher's new lightweight, non-conductive S1 composite, racers can expect better balance down the centerline of the chassis, improved jumping ability and more forgiving handling from the new configuration and material. Use with original equipment top plate or new, more flexible "slim" top plate, as debuted by Yukka Steenari at the '97 Worlds.

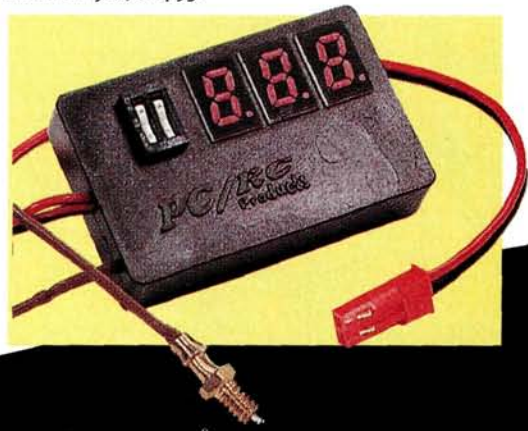
Part: U2045 chassis, U2046 top plate; \$32.50, \$17.95.

PC/RC

Exhaust Gas Temperature Sensor

Knowledge is power; in this case, it's nitro power! PC/RC's newest tuning aid is their exhaust gas temp sensor, which allows you to precisely monitor exhaust heat for best performance. Just drill a hole in the exhaust manifold for the sensor, and you're in!

Part: EGT-901; \$84.95.





RIDE Inner Mesh Belted Slicks

Traction is everything when you're racing on pavement, and traction is what you get with Ride's new Inner Mesh belted slicks. A soft, sticky compound virtually glues your car to the road, while an internal mesh belt supports the supple rubber. These new treads are available to fit sedans and minicars, as well as F1 machines and Kyosho's Super Ten vehicles.

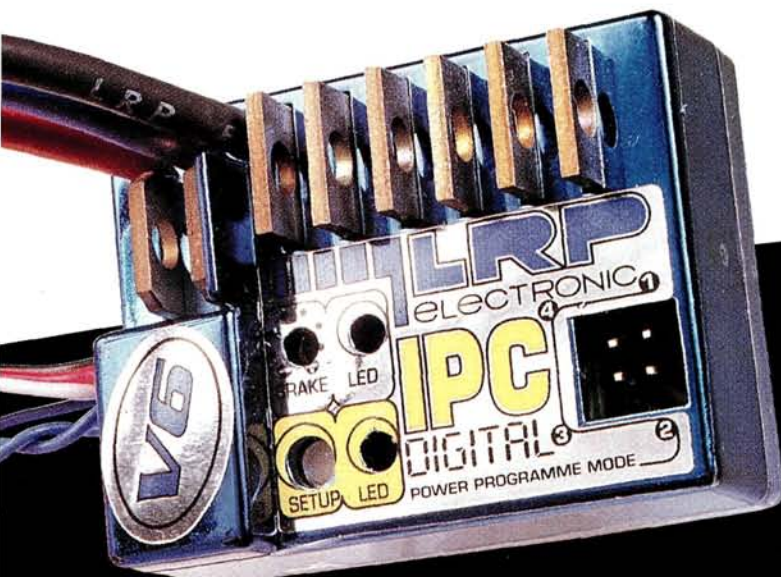
Part: DYN2700-DYN2740, sizes to fit 1.5, 2, 2.5 and 3mm, .050, 1/16, 5/64 and 3/32 inch; \$14.95.



TRINITY D3

Trinity's newest iteration of their class-leading D2 mod monster has the usual features—hand-wound armature, epoxy balancing, beefy magnets—but adds new features like an inspection hole for checking the commutator, larger heatsinks and larger solder tabs (which still accept slip-on leads). Also, a new brush stabilizer system built into the hoods pushes the brush against the heatsink for better cooling while eliminating brush chatter, and the endbell has been redesigned to hold ball bearings in tighter. Airflow through the motor is improved, thanks to redesigned cooling vents on the back of the motor can. Finally, the new "XXX-slotted" armature provides the same torque as the D2 but generates more rpm. And don't forget the gold plating on the motor can!

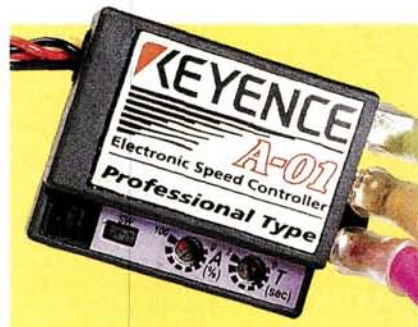
Part: D3106-D3317 (6 to 17 turn, various winds); \$95.



DYNAMITE Hex Wrenches

A hex wrench might seem like the most ubiquitous tool in R/C, but Dynamite's beautiful red-anodized units are something truly special. The diameter of the knurled handles varies with the size of the hex tip—larger tips for high-torque applications get larger handles, while the finer sizes sport slender handles to help prevent over-tightening. An aluminum sleeve supports the precisely machined hex tips and features a broad, flat and correspondingly large setscrew to secure the tip in the handle. Finally, a flat side is machined into the handle to avoid bench rollovers, and it is inscribed with the tip size.

Part: DYN2700-DYN2740, sizes to fit 1.5, 2, 2.5 and 3mm, .050, 1/16, 5/64 and 3/32 inch; \$14.95.



KEYENCE A-01 ESC

New from Keyence is the A-01 ultra-small digital speed control. The unit shown here is the pro version and is about half the size of a matchbox and only weighs 18 grams. The A-01 is filled with pro-level features and technical specifications that match other top-of-the-line ESCs. Here's just a small sample of the A-01's hot features: high-performance surface mount FETs (SOP) and a special metal plate radiation heat structure (MPRS) pc board that allows the FETs to operate more efficiently while saving weight; super high-frequency operation provides longer run times; programmable current limiting; replaceable wire posts, and much more. Keyence manufactures many other innovative products that will soon be available in the U.S.

For pricing and availability, call Great Planes Hobby Distributors.



PARMA Touring Chassis

Parma has also jumped aboard the growing parking-lot racing craze with a hot new 4WD touring car of their own. Although the car has not yet been officially named, you can tell

that this is one serious racer. The car features a dual-plane graphite chassis with a belt-driven 4WD drive train. Front and rear ball diffs, super-narrow front and standard-width rear tires, as well as special on-road suspension geometry, keep this car planted to the track surface, no matter what the track conditions are. No pricing or product numbers were available at press time. Call Parma for information.



LRP V6 ESC

New from LRP is the V6 IPC Digital ESC, which boasts many new revolutionary features. The V6 is a true pro-level racing ESC that is used by all of Team Associated's factory team drivers. Here's a quick list of the unit's cool racing features: active current limiter with four different power programs for utmost driver control and battery efficiency; automatic brake and initial brake amplifier that allows you to dial in as much braking as you want (from 0 to 100 percent braking); programmable digital start mode that minimizes reaction time, sets off the current limiter and optimizes acceleration and battery efficiency; ultra-high-frequency operation (3140Hz); simplified single-button setup with easy-to-follow LED sequence lights; turbo-start mode that temporarily disables the current limiter. Contact Associated Electrics for part and pricing information.

New For '98

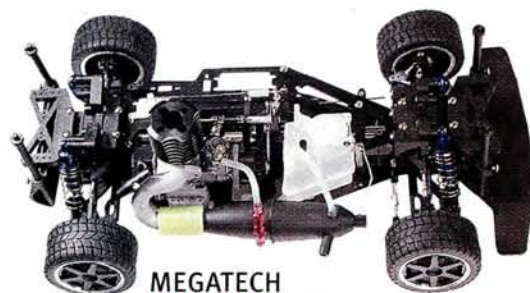
PROGRESSIVE SUSPENSION Piggy Back Shock Reservoir

Stadium trucks got 'em. Motocross bikes got 'em. Now R/C racecars can have reservoir-equipped shocks too, thanks to the boing-doctors at Progressive Suspension. They've taken years of full-scale suspension tuning experience to create the wild new Piggy Back system you see here. A closed-cell foam insert in the reservoir recovers displaced oil as the shock shaft travels into the shock body, then returns it as the shaft exits. Best of all, this is accomplished without adding or circulating air through the oil; that should mean total consistency run after run! Expect lightweight composite construction for the production units, which will fit Progressive's own external damping control shocks as well as Associated shocks. Call Progressive Suspension for pricing and availability.



PROTOFORM Sidewinder Truck Body

Looking to jazz up the looks of your Team Losi GTX glow-powered vehicle? Well, then you'll have to look no further than Protoform's new Sidewinder truck body. The body not only looks really cool but fits the GTX like a glove. The rear body-mount area has been reinforced to prevent damage and the body is molded from durable .040 Lexan for additional crash protection. The body also includes an add-on rear wing and window masks to make painting a little easier. Part: 1516; \$19.95.



MEGATECH Nitro Tourer

Megatech is new to the touring car scene (heck, they're new to the R/C car scene) but you'll probably see more than a few of these shaft-driven, 4WD, 2-speed, aluminum chassis, alloy-shock-suspended speedsters at the local lot. Wide and rugged, Megatech's Nitro Tourer is up to the task of hard running—and fast running, too—with Megatech's own pull-start M-16 engine delivering the ponies. Available with clear Benz, BMW or Alfa body and decal set. Part: MTC 4000 (Benz), MTC 4001 (BMW), MTC 4002 (Alfa); \$249.95.

MIP Aluminum CVD

How do you improve an item that's already incredibly popular and race proven? Well, you can always make it lighter! MIP has done just that with their new Aluminum CVDs, which provide the usual good stuff (near-zero backlash, full rebuildability, no-mod installation) with a new lighter weight. Less mass in the axles means faster acceleration for your car—isn't that what racing is all about? Call MIP for price and availability.



JR R-1

JR's entry into the über-radio fray is the R1, a transmitter with plenty of smarts that won't make beginners feel like dummies. By selecting beginner mode, only the radio's basic tuning adjustments are available; click into expert mode, and you've got enough options to impress a shuttle pilot. A Nintendo-esque keypad gives you access to features such as antilock braking, multi-point programmable throttle and brake curves, 10-model memory, 100-lap stopwatch and more. A large LCD screen keeps you in touch with the R-1's many features at a glance. The R-1 also includes JR's new R200 receiver, their smallest ever FM receiver. Part: JRP3140 R-1 Tx and Rx, FM; JRP3160 R-1 Tx & Rx, PCM; \$519/\$599.



NOVAK Super Rooster

Electronic speed control technology takes a giant leap backwards with the release of Novak's Super Rooster reversing (backwards, get it?) speed control. New features include Smart Braking, which prevents the Super Rooster from activating reverse until after it has braked the car to a safe speed. For racing use, the reverse feature can be disabled and easily reactivated later with the one-touch setup button. Novak's polar drive technology allows the Super Rooster to keep its cool even with today's hot modifieds; it's so efficient that Novak does not specify a motor wind limit! There's no limit to how fast you can go—forward or backwards. Part: 1860; \$210.

Editors' pick

RPM

Starz, Torker and Typhoonz Wheels

Looking for that extra concours touch without compromising performance? Then turn your attention to these snazzy new hoops from RPM. They've combined the look of natural aluminum with the strength of custom-blended nylon to create three race-ready styles for your Losi or Associated truck. Pictured from left to right are the Typhoonz, Torker and Starz styles. For easy tire gluing, RPM removes the silver finish from the rim's bonding area. In addition to the matte silver look, the wheels are available in white or dyeable natural. By the way, the Typhoonz are molded as rights and lefts, so the spokes don't look "backwards" on one side of your truck.

Give RPM a call for part numbers and information on availability. Prices range from \$7.95 to \$9.95.



PROTOFORM

Taurus SS Body

The biggest news to hit NASCAR racing since GM unveiled the Monte Carlo stock car in 1995 is the announcement that Ford will replace the venerable Thunderbird with the Taurus stock car in '98. Protoform responded quickly to the needs of oval racing fans with the release of the 1/10-scale Ford Taurus body. This realistic new Ford body is designed for both carpet and asphalt oval tracks and offers a perfect blend of down force and drag. It's designed to fit all narrow oval car chassis and is available in two different thicknesses. The body also includes an add-on spoiler and window masks.

Part: 1216R (standard) and 1216L (light); \$19.95.

RPM

Talonz and Clawz Chrome Wheels

If RPM's aluminum finish isn't bright enough for you, then these gleaming jewels should be just the ticket. In usual RPM fashion, the show-car looks of Clawz (left) and Talonz (right) are matched only by their performance potential. Extra rigid and precisely molded, the new wheels feature a bright chrome-like finish with pre-stripped tire bonding area and, as you can see, killer looks. If chrome is just too much style for you, you can get 'em in white. Available for Losi and Associated trucks. Call RPM for part numbers and availability. Prices range from \$7.95 to \$9.95.



OFNA F1

OFNA is one of the first R/C manufacturers to offer a 1/10-scale nitro-powered F1 racecar. THE OFNA F1 comes 100 percent assembled with a Force .12 pull-start engine mounted on the separate motor pod. It also includes an aluminum chassis with T-plate/friction damper disks for superior rough-track handling. Up front, you'll find an authentic-looking F1 front suspension with traditional coil-spring damping. A solid rear axle with adjustable ball diff and rubber slick tires with foam inserts are also part of the car's hot features.

Give OFNA Racing a call for pricing and availability.

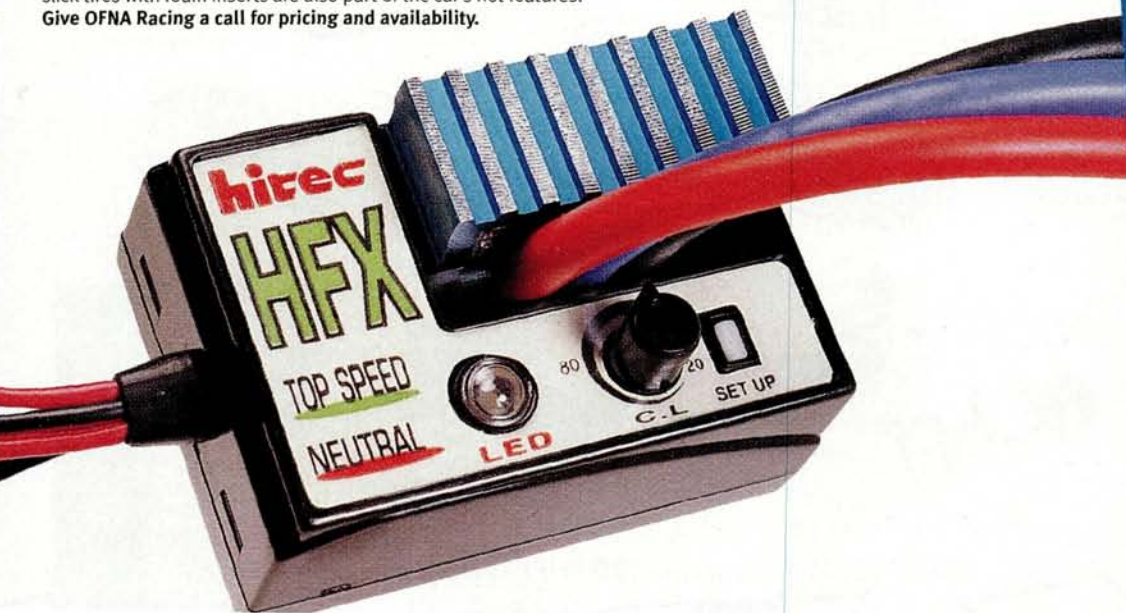


MEGATECH Rapid-Fire Starter System

Tired of yanking that pull-starter like a blue-haired retiree working a nickel slot machine? Want to spend more time running and less time pulling a string? Megatech's new Rapid-Fire starter allows you to fire up your motor with the press of a button—one touch heats the glow plug and spools up the motor via a small electric motor, powered by a 7.2V battery pack (not included) plugged into the hand-held starter unit. Worried it won't fit your engine? The Rapid-Fire fits Dynamite, HPI, Leo, OFNA, o.S., Tamiya and Thunder Tiger .12 to .16 powerplants, so chances are it'll fit whatever you've got! Part: MTC16500; \$39.95.

HITEC HFX ESC

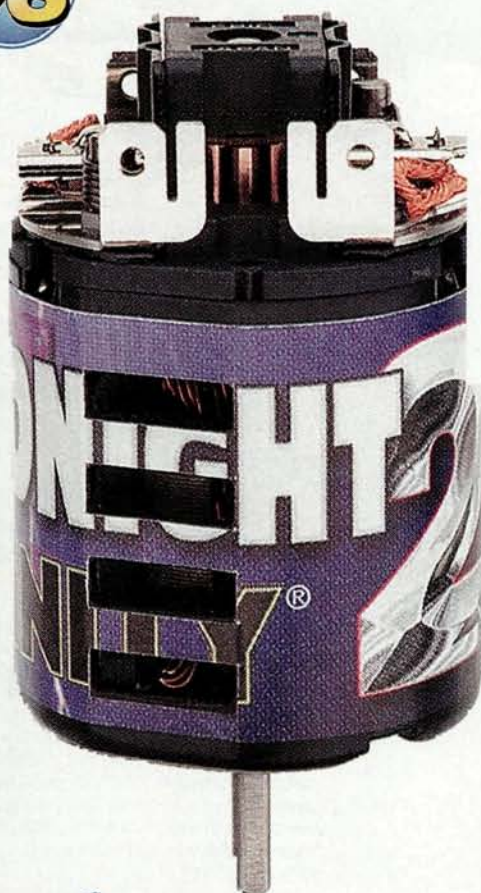
Hitec has bridged the gap between sport-level and racing ESCs with the release of their racing-orientated HFX speed control. The new ESC features super-high performance FETs and double-deck circuitry to keep the unit small and lightweight. Its simplified "one push" setup button and current-limiting adjustment with easy-grip knob make it extremely user-friendly. The unit also features three large 12-gauge wires that exit from the top of the controller for simplified installation. If you're looking for a high-performance speed control that can handle today's hot modified motors, give this unit a hard look. Give Hitec a call for pricing and availability.



New For '98

TRINITY Midnight 2

Peek into the business end of almost any winning stock-class truck, buggy or pan car and you'll probably find the familiar blood-dipped fangs of Trinity's Midnight motor. Trinity usually rest on their laurels for all of about five minutes, so it's little surprise that there's a Midnight 2 headed for your local hobby shop. Many of the D3's features are carried over to the new stocker (inspection hole, brush damping, 1.4mm can), but there are plenty of additional features as well; Trinity's LCG™ Flat Can Technology moves the magnetic field closer to the armature between the magnet tips for a stronger field, and the new "Z-speed" armature design uses a stepped outer diameter that "fools" the motor into thinking it has more than 24 degrees of timing. The new motor also has a flat spot on the motor can to make maintenance much easier—the motor will not roll off the workbench. For the ultimate advantage, try the dyno-tuned Midnight 2 Pro with motor tube and dyno sheet. The Midnight 2 was designed to produce more torque than the original Midnight, with an rpm range between that of the Midnight and the X-Star. Part: RC2295 Midnight 2, RC2296 Midnight 2 Pro; \$39.99.



FSR Silicone Shock Oil

FSR knows how important proper damping is to race-car setup and now offers a

range of pure silicone oils to make shock tuning easy. From thin 10WT to just-like-honey 800WT, FSR shock oils give the damping options you need. Also new from FSR: high-performance diff grease and air filter oil, pictured with their new high-flow air filter.

Contact FSR for more information.



Editors' pick



TEKIN

DIS350 Battery Discharger

Our perceptive readers will remember seeing an artist's rendering of Tekin's new DIS350 Battery Discharger in a previous issue. The DIS350 is now available and is sure to be a hit with serious racers who want to get the most performance and longest life out of their expensive matched battery packs. Here are just a few of the unit's unique features: adjustable discharge rate from 1 to 30 amps; three discharge modes to train battery packs for specific racing applications; 1- to 12-cell discharge capability for matching, testing and rematching batteries; calibrated internal resistance measurements to accurately find the lowest resistance cell; computerized electronic software calibration for maximum accuracy; and much more. The DIS-350 can also be plugged into Tekin's 112 AC chargers to provide a complete charge, discharge, matching, cycling battery center.

Part: DIS-350; TBA.

ORION

Pro 900mAh Receiver Pack

When your electric car's pack runs low, the car slows down. When your transmitter batteries are down, the low-battery alarm goes off. When your receiver batteries are short on power ... well, you don't usually discover that until your car is stuck in the middle of the track looking for a signal while the competition roosts by. Keep your servos yankin' with Orion's new Pro 900 receiver

back. Five 900mAh cells give your receiver and servos all the voltage they need with 30 percent greater capacity than the usual 600mAh cells. Just plug it in!

Distributed by Peak Performance; call for availability and pricing.



TAMIYA

Voltec Fighter

Believe it or not, R/C cars are not the biggest hobby craze over in the Land of the Rising Sun. The most popular hobby is, by far, the mini 4WD—you know, that little 1/32-scale 4WD car that runs around on a small track, sort of out of control? Well, if you've never seen any of these little cars battle it out in a race, you surely will in the near future. In the meantime, Tamiya has enlarged one of these mini 4WDs to 1/10 scale just for us R/C'ers. Enter the Voltec Fighter: the Voltec features a 380-type electric motor; mechanical speed control; proven shaft drive, full-time 4WD and extremely simplified instructions. This car is perfect for beginners, and is as rugged as heck. It's also inexpensive, so it makes a great gift.

Part: 57602; \$123.

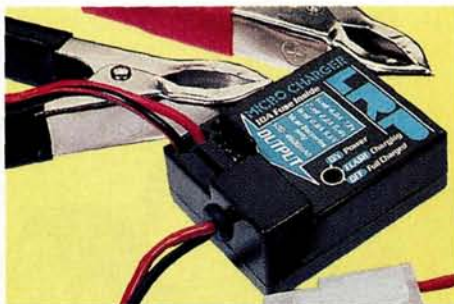


HPI Mini RS4

HPI's new Mini RS4 is sure to be a hit with racers and sports-minded enthusiasts around the world. The new Mini RS4 is a miniaturized RS4 sport and shares most of its high-tech features. Dual-plane fiberglass chassis, twin-belt 4WD drive train, front and rear bevel-gear differentials, and a whole lot more. Many of the RS4's hop-ups work equally well on the Mini RS4, so you'll be able to customize your car as little or as much as you like. The RS4 Mini comes with a choice of the following cool-looking body styles: Mercedes Benz A-Class, Volkswagen Polo and Volkswagen Golf VR6. Although the exact pricing had not been determined at press time, the Mini RS4 should sell for a few dollars less than the RS4 Sport. **Part: 281, Mercedes A-Class body; 282, Volkswagen Polo; 283, Volkswagen Golf VR6.**

HOLESHOT Super Cooler Heatsink

Is your car running hot because you don't have enough room to squeeze a heat sink onto your motor? Holeshot's new Mini Heatsink is a perfect fit for the tight confines of today's racing machines. Machined from aluminum for a precise fit, and black-anodized for maximum heat dissipation, the Mini Heatsink helps cool your motor, resulting in more torque and longer motor life. No-tool installation; fits most cars and trucks. **Part: 2100; \$22.95.**



LRP Micro Charger

Hey, look! A new ESC from LRP! Uh, wait a minute; that's their new Micro Charger! This little gem will definitely free up some room on your bench without skimping on features; the Micro Charger will juice up 6-, 7-, or 8-cell packs and offers Super-Delta peak detection technology to prevent over-charging. A single LED turns on, off and blinks to indicate power on, charging in progress and charge completion. The Micro Charger will even trickle-charge your packs. Good things do come in small packages! **Part: 4101; TBA.**



TEAM LOSI Kinwald Edition Double-X CR

Team Losi has released (in very small numbers) a special Double-X 'CR' "Kinwald Edition" off-road buggy that's loaded with many of the hop-ups that Brian Kinwald used to capture the 97-98 IFMAR Off-Road World Championship. The Kinwald Edition includes a graphite chassis, chassis brace, battery strap and rear shock tower. A new "Kinwald" laminated front shock tower and Lunsford Punisher titanium tie-rods are also part of the picture. The car also includes blue-anodized locknuts, wing buttons and motor mount just like on Brian's car. But wait; there's more: Team Losi also includes a ball-bearing steering bellcrank, a hard-coated transmission top shaft, titanium-nitride shock shafts, MIP CVDs, kingpin ball studs, an accelerator racing body and X-2000 rear and wide-body front racing tires. Team Losi has released the Double-X 'CR' "Kinwald edition" racecar in celebration of Brian Kinwald's recent world championship victory and as a way of saying thank you to all of Team Losi's loyal customers. How much will it cost, you ask? Only \$50 more than a regular XX 'CR.' Wow! **Part: A-0027.**



GREAT PLANES Ball-Cup Multidriver

This nifty multi-tool will be a welcome addition to your toolbox; it makes short work of installing ball ends on both Losi and Associated vehicles, as well as Tamiya ball cups and mini ball cups often used on mechanical speed controls and throttle linkages. Just slip the pieces together to fit the ball cup in question, then twist it into place with the high-torque handle. No more throbbing fingertips! **Part: GPMR8035; \$3.99.**

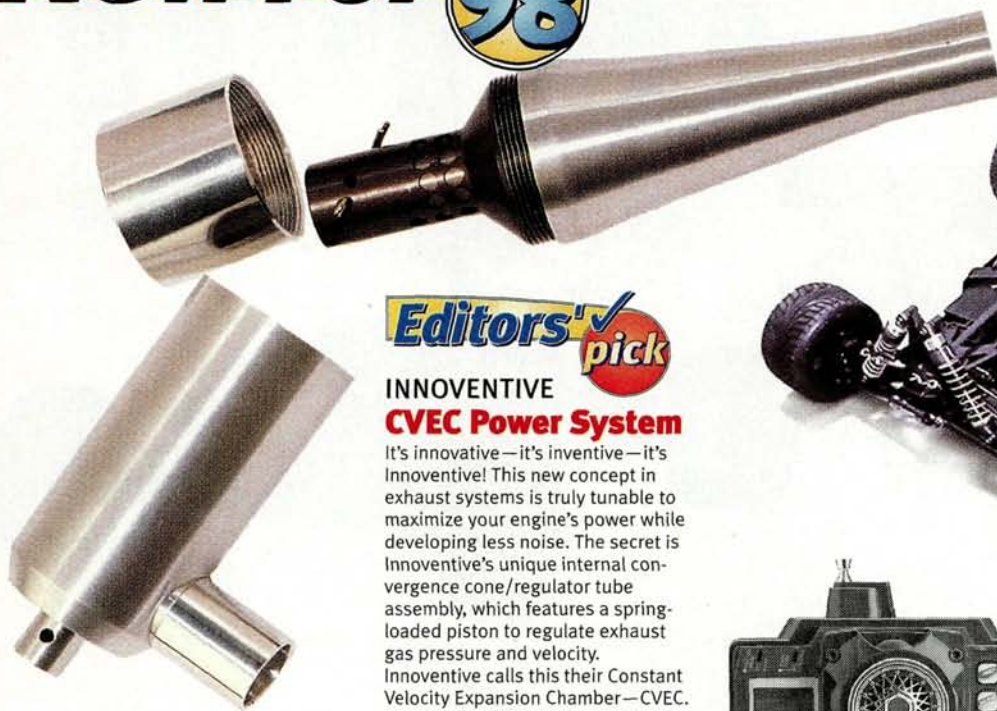


Editors' pick



TRAXXAS 4 Tec

Traxxas has announced that they are adding a 4WD touring car to their stable of high-tech sport level products. The 4 Tec features a double-deck molded chassis, dual-belt full-time 4WD drive train, twin ball differentials, ball bearing supported top shaft, oil-filled shocks and a completely independent suspension with adjustable camber and toe in/out. The 4 Tec also includes a 20-turn motor and mechanical speed control, so first-time racers can get started quickly and economically. It has cool-looking 3-spoke chrome wheels, slick tires and a beautiful Calibra body. The 4 Tec comes equipped with adjustable body mounts and 4mm axles with standard touring car hex-hubs, which means that it's compatible with most narrow touring car bodies, and any wheel and tire combination will work just fine. **Part: 4301 (unassembled) \$180; 4310 (with radio) \$300.**



Editors' pick

INNOVENTIVE CVEC Power System

It's innovative—it's inventive—it's Innoventive! This new concept in exhaust systems is truly tunable to maximize your engine's power while developing less noise. The secret is Innoventive's unique internal convergence cone/regulator tube assembly, which features a spring-loaded piston to regulate exhaust gas pressure and velocity. Innoventive calls this their Constant Velocity Expansion Chamber—CVEC. An optional calibration tube allows the total length of the pipe to be altered to further tune the system. Part: HSU-10-301; TBA.

PROTOFORM Boxter S Coupe Body

Protoform's new 1998 Boxter S Coupe body is sure to be a hit with touring car racers around the country. Designed to fit most narrow 4WD and FWD touring car chassis, no one could question this body's impressive looks. Protoform did a fine job in capturing the sleek lines and styling of this exciting vehicle, and they even include window masks to ensure professional looking painting results. Part: 1415; \$21.95.



HPI RS4 MT

We showed you photos of HPI's prototype RS4 MT racing truck in Chris Chianelli's "Inside Scoop" in a past issue. Well, the truck passed HPI's extensive testing and is now ready to turn your driveway or street corner into a high-speed roadcourse. As you probably figured out by now, the RS4 MT is based on the company's high-performance 4WD RS4 Sport touring car chassis. The RS4 MT gets its long and wide stadium-truck stance from its extra-long molded semi-tub chassis and extra-long front and rear suspension arms. Chrome 5-spoke 2.2-inch diameter wheels with V-groove radial tires round off the truck package. The body is one of the coolest racing truck bodies around and comes complete with a full set of decals. A Lexan chassis cover virtually seals the chassis from the elements and includes a molded-in driver figure. If you want to do some off-road racing, then adjust the ride height, add some off-road tires and go kick up some dirt. Many of the RS4s hop-ups will work well on the MT (including the 2-speed tranny), so the possibilities are endless. Call HPI for pricing and availability.



KO PROPO EX-1 Mars

You can't talk fancy radios without including KO, as evidenced by their new EX-1 Mars computer radio. Perhaps the most compelling feature of the Mars is its system level function which allows the user to tailor the radio to suit his experience. Level 1 activates the most basic functions, with more features called into each level until reaching level 4 operation—full access to all 27 system features, including 10-model memory, ABS braking, fuel timer, throttle and steering exponential, and much more. Part: KOP10; \$349.99.



THUNDER TIGER Pro Thunder Nitro Truck

Backyard bashers and club racers alike should enjoy the newly revised Pro Thunder from Thunder Tiger. A new chassis configuration puts the throttle and steering servos side by side for easier linkage setup and better weight distribution. A hot-looking blue anodized double-decker chassis and matching aluminum dampers make the Pro Thunder off-road ready. Although not shown here, production kits include Thunder Tiger's powerful and reliable BZX pull-start motor. Part: TBA.



ORION Active Sport Pack

When it's time to do a little bangin' around the local parking lot with your buddies, the races don't end at four minutes. Orion has the run time you'll need with the new 2000mAh sport packs featuring Powers Max cells. For not much more than premium 1400 or 1500 milliampsters, you get rugged sleeved construction, flexy silicone wire, and the good ole Tamiya-style connector—and lots of run time! Distributed by Peak Performance; call for availability and pricing.

New For '98

TRAXXAS Nitro Sport

Traxxas has once again addressed the needs of the first-time gas racer and produced what is probably one of the most user-friendly nitro-powered stadium trucks of all time. Officially called the Nitro Sport, this new stadium basher is ready to rock and roll right out of the box. The Nitro Sport is basically a toned-down Nitro Rustler. By adding a smaller, easy-to-tune carburetor (without a low-end needle valve adjustment), first-time gassers have one less adjustment to worry about. The Nitro Sport comes equipped with an electric onboard starter that is powered by a detachable 7.2V stick battery pack. Just plug in the battery and push a button and the TRX .15 nitro engine rumbles to life. The Nitro Sport also includes a tuned pipe, big-bore shocks and a cool new body with a giant rear air intake. Part: 4504 (without radio) \$420; 4510 (with radio) \$520.

Editors' pick



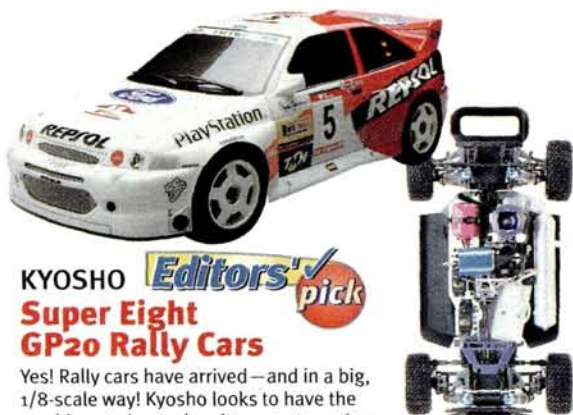
AIRTRONICS M8

The new flagship of Airtronics' surface radio line features an extra-large, top-mounted LCD display that allows easy, on-the-go viewing of such features as 10-model memory, adjustable trim rate, throttle and steering exponential, lap and elapsed timers and dual rate steering. The M8 also keeps you informed with a low battery alarm—no more embarrassing dashes off the drivers' stand for fresh cells! A glitch-busting micro-narrowband receiver and reversible-for-lefties grip only partially complete the M8's lengthy feature list. Part: 90280FM (includes two 94102 servos and battery box); \$549.95.



PC/RC Electronic Fuel Regulator

Do you ever wish for the convenience of an electric vehicle when you run your nitro machine? All the time, you say? Well, PC/RC has just what you need! Their new microprocessor-controlled fuel delivery system electronically feeds the motor exactly what it needs depending on your throttle input. It really works! Installation is a simple plug-in affair—the only "hard" work is installing the exhaust gas sensor, which requires drilling a small hole in the manifold. Sixteen different settings allow the unit to be customized for optimum performance in cars, planes and boats. Part: EFR-801; 159.95.



KYOSHO Editors' pick Super Eight GP20 Rally Cars

Yes! Rally cars have arrived—and in a big, 1/8-scale way! Kyosho looks to have the machines to beat when it comes to authentic dirt-slingin' action. Available in Repsol Ford Escort (shown here) and Mitsubishi Lancer Evolution trim, both nitro terrors are built around the new LandMax chassis. This new platform arrives 60 percent pre-assembled and includes mudguards, allowing the cars to race on flat dirt tracks with ease—and with plenty of speed—thanks to the included GS21-R pull-start motor. Other features include a 10-bearing, 3-diff, shaft-driven drive train; slide-valve carb; authentic decals; and more.

Part: KYOC0529, Mitsubishi Lancer; KYOC0530—Repsol Ford Escort; \$599.99.

PRO-LINE New Aggressive 2.2-inch "Gladiator" Truck Tires.

Take a good look at these truck tires: they are the ones that all backyard bashers need, but don't know it yet! The new Gladiator tires are the perfect choice for cruising around dirt, grass or asphalt. These truck tires will turn your Traxxas, Losi, Kyosho, Tamiya, or Associated truck into an all-terrain terror. Available in both soft M2 and super sticky M3 compounds, these truck tires are sure to be a big hit. Look at the picture once again. Notice the cool-looking truck wheels? Well, those are Pro-Line's new Eliminator 2.2-inch truck wheels. The new Eliminator truck wheels now provide racing truck owners with a stylish, scale-looking wheel that's just as light as the stock wheels. The wheels are available in bright yellow, or dyeable white for those who like to create their own colors. Parts: B170M2 and B170M3 Pro-Line Gladiator Truck Tires. Parts for Associated truck wheels: 2610 front (white), 2610Y (yellow); 2611 rear (white), 2611Y (yellow); for Losi: 2612 front (white), 2612Y (yellow); 2613 rear (white), 2613Y (yellow).



Editors' pick PRO-LINE/JACO Pre-Assembled Sedan Tires

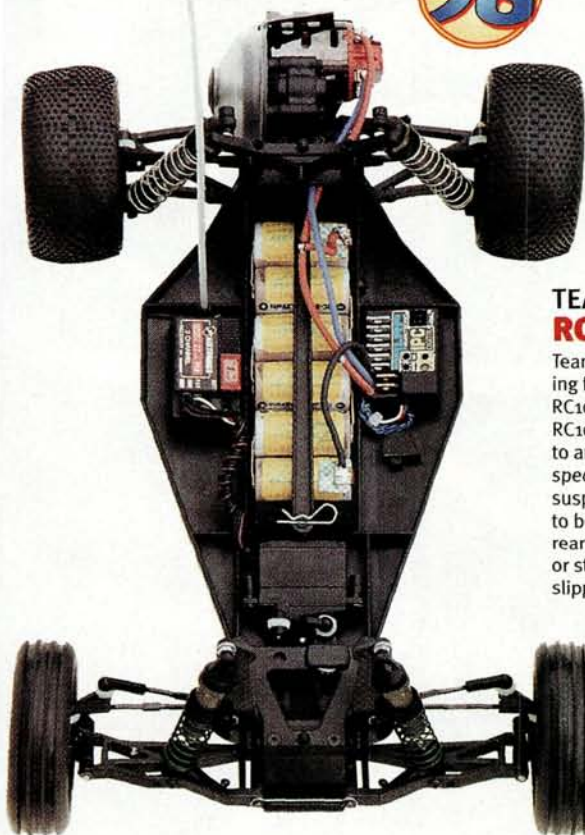
Gluing touring car tires to wheels requires precision if the tire is to bond perfectly true. Most racers usually end up with tires that wobble around, and this provides inconsistent handling. Well, Pro-Line/Jaco has addressed the needs of touring car racers by providing pre-assembled touring car wheels. Pro-Line's 1/10-scale pre-assembled standard width sedan tires are sure to revolutionize touring car racing around the world. Instead of using poorly fitting foam inserts that can move around the inside of the tire, the engineers at Pro-Line/Jaco use precision-formed foam that fits the contour of the inside diameter and sidewalls of the tires. The entire assembly is then bonded together to prevent expansion and sidewall flex. The results will amaze you! Faster lap times and increased drivability can now be enjoyed by all. The tires are also available in two different compounds for additional tuning. Part: 2991 (yellow-soft); 2992 (green-medium).



PRO-LINE Sedan Wheels and Low-Profile Slicks

Pro-Line's new Warlock, Inferno and Typhoon wheels are the perfect bolt-on accessory for your touring car. Available in white, black and chrome, and in standard and super-narrow widths, these new wheels are a stylish way to add performance to your vehicle. Why not install a set of Pro-Line's new S2 or S3 compound sedan tires to these cool wheels? Pro-Line Low-Profile Sedan Slicks were used to capture both NORRCA and ROAR national championships and are just what you need to smoke your competition. These new wheels and tires are sure to take the growing parking-lot racing class to a new level. Part: 1089S2 and 1089S3, low-profile sedan slick (standard width); Part: 1090S2 and 1090S3, low-profile sedan slick (super-narrow); Part: 2618 Warlock wheels (standard), 2622 (super narrow); Part: 2619 Inferno wheels (standard); 2623 (super narrow); Part: 2620 Typhoon wheels (standard); 2624 (super narrow).

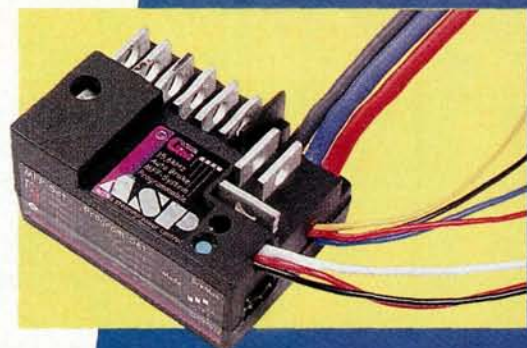




TEAM ASSOCIATED RC10B3

Team Associated has added so many hot new racing features to their world championship-winning RC10B2 that they had to give it a new title. The RC10B3 is here and ready to take off-road racing to an all-new level. Here are just a few of the B3's special new features: all new quadra-symmetric suspension allows equal length suspension arms to be used, and this ensures that the front and rear arms will pivot on the same plane for superior stability and rough track handling. A new larger slipper clutch provides more consistent action and allows the slipper clutch to be set looser for improved traction. The slipper pad is also keyed to the slipper's front and rear backplates for easier assembly, and the spur gear rides on a single bushing for improved concentricity. Other improvements include: new longer rear arms and rear hub carriers for improved rough-track handling; a new kingpin ball stud design that positions the outer camber link directly above the pivot point; new 30-degree caster blocks and redesigned steering arms are installed to improve steering Ackerman. The B3 also includes a sleek new body and much, much more.

Part: 9033; \$320.



GM RACING ASP ESC

New electronic developments and the demand for creative and innovative products inspired the engineers at GM Racing to design the GMASP electronic speed control. The GMASP represents the next generation of mega-feature ESCs and is designed for the most discriminating racer. Features include: active steering and power control (ASPC) that actually adjusts the steering, throttle and braking to prevent under- or over-steer while cornering; unlimited throttle and brake control (513 steps); adjustable high-frequency control (from 3.9 to 15.6kHz); automatic brakes (ABS); automatic shutoff via transmitter; shielded case for glitch-free operation; turbo-start mode; and much more. The GMASP is also available without the ASPC for IFMAR legal competition.

Part: HE2214, with ASPC; HE2215, without ASPC.

TEAM LOSI Touring Car Tires

Team Losi's new touring car tires are not just designed for the company's Street Weapon touring car. Racers around the country are discovering that Losi's new low-profile tires in the new blue compound are the hot ticket for just about any track surface. Slicks are available for slick and smooth track surfaces and the radials will hook up just about anywhere. The tires included Losi's killer molded-foam inserts that actually fit the inside shape of the tire for much more consistent traction.

Part: A-7701B (slicks); A-7710 (radial); \$13.95.



TEAM LOSI X-2000 and Red Compound Tires

Team Losi's new X-2000 tires helped Team Losi/Team Trinity factory driver Brian Kinwald win the highly competitive IFMAR 2WD Off-Road World Championships. The X-2000 is a low-profile flat-car case tire that features many fine micro blocks with a center X-tread. The tires are designed to provide maximum adhesion to slick blue-groove track conditions. The tires are available in gold, silver and the brand-new red compound, which is Losi's stickiest tire yet. When all others fail, the X-2000 will prevail! Call Team Losi for pricing and information.



KEYENCE Desk Runner

Quick, how many different sizes do R/C cars come in? Let's see, there's 1/4 scale, 1/5 scale, 1/10, 1/12, 1/18 and even 1/24 scale. And now there's HO scale! Keyence, the big Japanese company that makes tiny things, offers the Desk Runner as the triumph of road-going (or desk-going) miniaturization. In addition to scale good looks, the Desk Runner features fully proportional steering and throttle in forward and reverse, controlled via the included 2-stick transmitter. It's just the ticket for mid-afternoon stress relief at the office—just don't let the boss catch you!

Contact Great Planes for more information.



TAMIYA Mitsubishi Lancer Evolution IV

Rally car racing lovers rejoice! Tamiya has finally released a rally car that's based on the company's venerable TA03F chassis. The new Mitsubishi Lancer Evolution IV includes a rugged plastic bathtub chassis and a belt-drive 4WD drive train. Rally block tires and 5-spoke wheels complement the mighty Mitsu's scale-looking body, and an included 540 motor and 3-step mechanical speed control get you started quickly and economically.

Part: 58199; \$267.



TAMIYA Nissan R390 GT1

Tamiya's new 1/10-scale Nissan R390 GT1 is the perfect blend of high performance and fine detailing. The GT1 features a new belt drive 4WD TA03R ABS plastic chassis with rear-mounted motor and forward-mounted battery pack. The new chassis has the same wheelbase as the TA03F and includes "L" shaped universal body mounts that allow any of Tamiya's narrow touring car bodies to fit right on. The kit also includes a 540 motor and 3-step mechanical speed control. A larger 1/8-scale R390 GT1 kit that's based on the company's TGX glow-powered chassis will also be available. Part: 58203, 1/10-scale; \$267. Part: 44007, 1/8-scale; \$665.



thrash
TEST

1/10 scale electric

TEAM ASSOCIATED

RC10T3

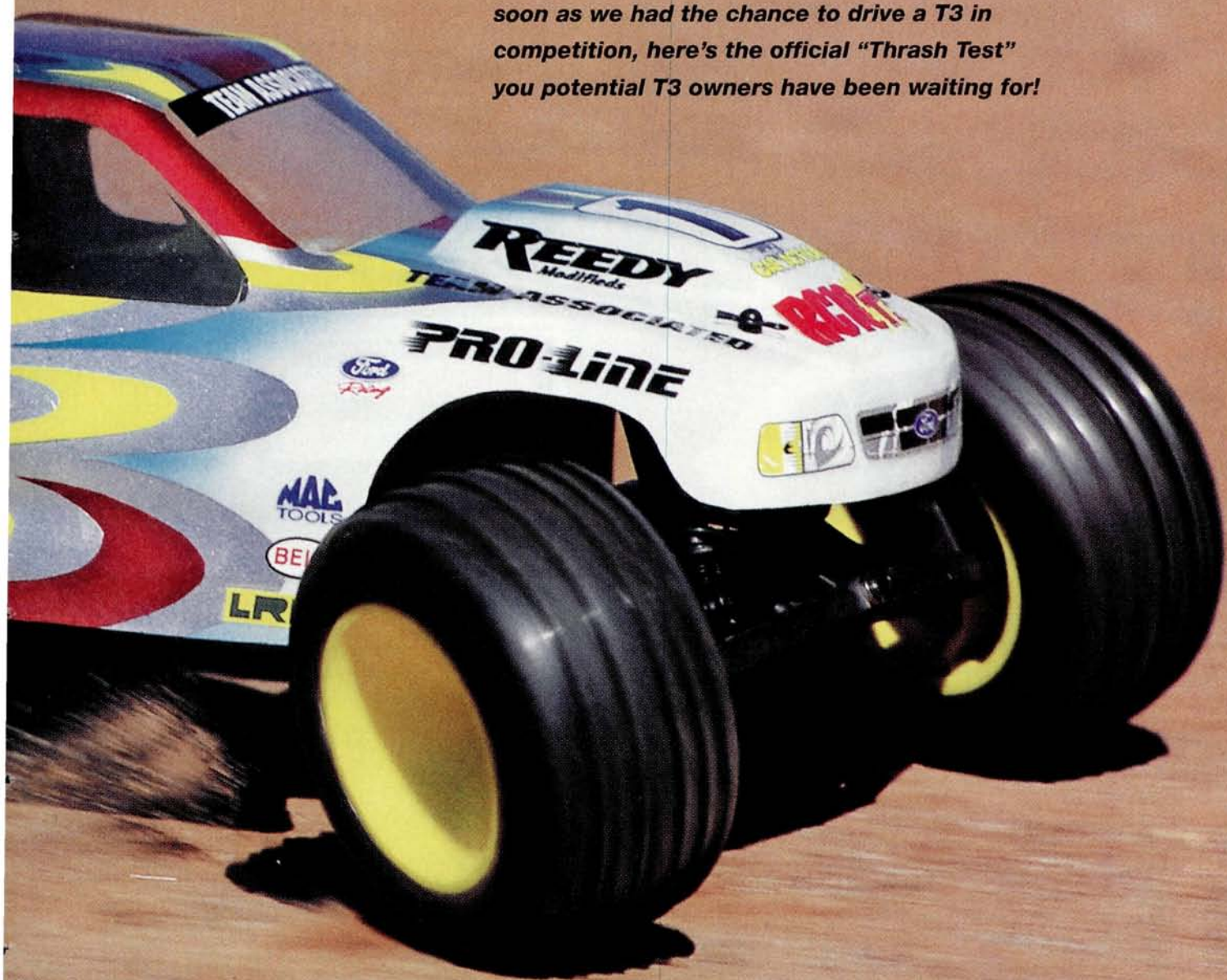
by Frank Masi



Not just new,
better than

RC10T, T2, T3. Does it seem too much to keep track of? Don't worry; much more is new about Associated's* latest racing truck kit than just its name. From the ground up, this truck has many of the same parts as Associated's World Champion B2 and the soon to be released B3 buggy.

In the October '97 issue, we gave you an inside look at the features of the T3. And because we did promise to report back as soon as we had the chance to drive a T3 in competition, here's the official "Thrash Test" you potential T3 owners have been waiting for!

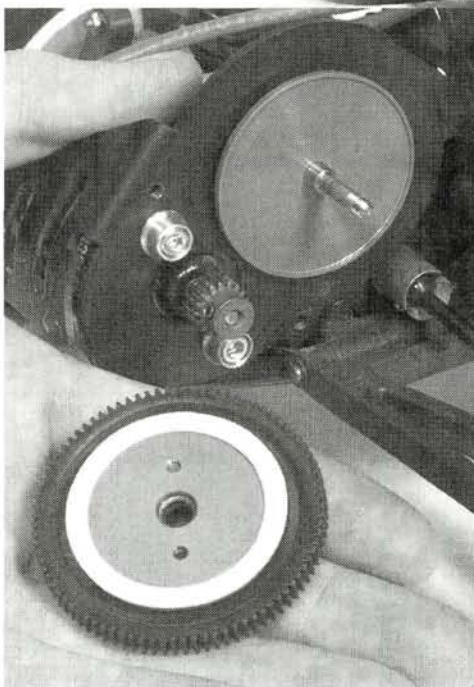


ever!

PHOTO BY JOHN HOWELL

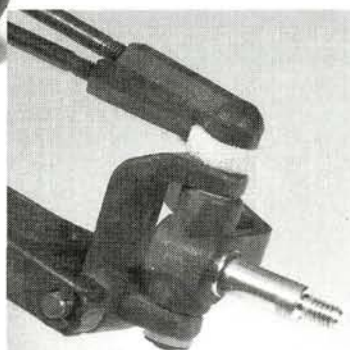
FEATURES

Here's an overview of the new features unique to the T3.

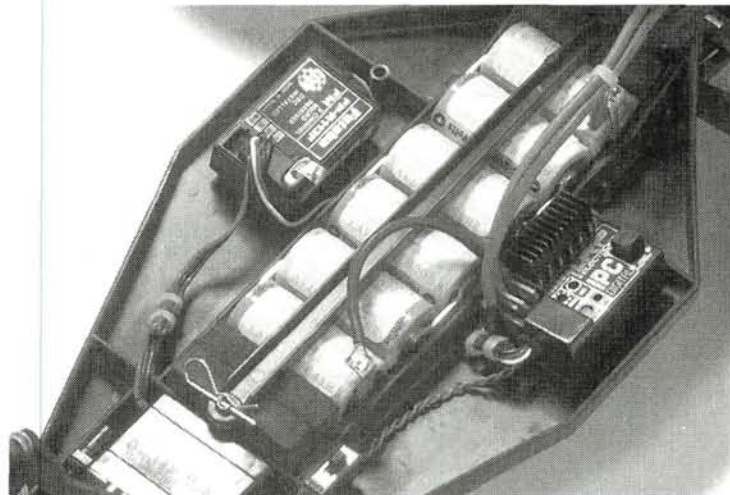
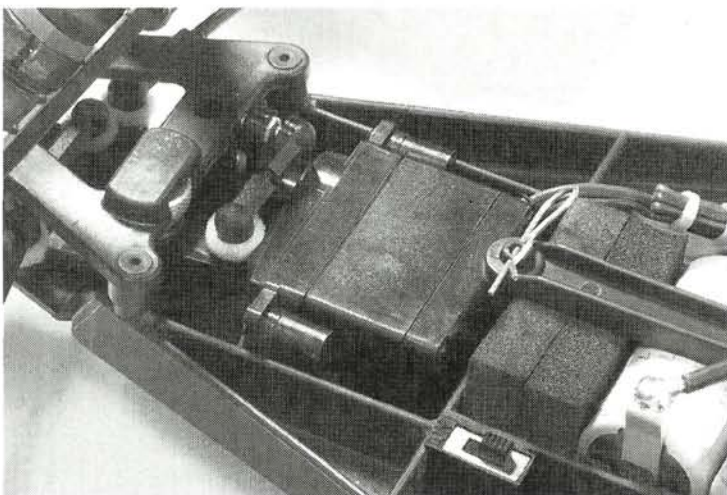


Associated has redesigned its Stealth slipper clutch (above) to include a larger diameter slipper pad. This allows the slipper to handle greater loads with a looser setting for longer pad life and improved traction control. Also, the pad is now "captured" by the slipper plates so that it cannot become extruded from the pressure.

A single steering kingpin (right) with a ball-stud at its top replaces the old truck's more complicated assembly, which consisted of a separate ball joint and kingpin. Not only does this new setup eliminate one complete pivot point from the suspension (for less friction during operation), but the new camber-position also improves handling.



New, longer rear shocks (right) provide more extension travel. This prevents the shock piston from slamming against the top of the shock body before the spring retainer contacts the bottom of the shock body. As the piston remains in the shock oil, overall damping is more consistent.



Above left: as with the B2, the T3's steering servo is mounted across the chassis rather than longitudinally, like that of the T2. Doing this allows more space on the chassis for the electronics and battery pack. A built-in servo-saver protects against broken servo gears, and the saver's tension is adjustable, so novices can set it looser for more protection. Above right: the T3's molded chassis is similar to that of the B2/3, but it's slightly longer to increase the truck's wheelbase. This also allows more battery placement options for fine-tuning the truck's weight distribution.

TEST GEAR

- Futaba* 3PJ FM transmitter with FP-R113F receiver. This is an excellent system that features 3-channel operation, microcomputer control, LCD and memory storage for up to eight model settings.
- LRP* IPC digital speed control. I found this ESC super-smooth and highly efficient. Plug-in programming chips allow you to select from one of four pre-programmed performance settings.
- Airtronics* 94157 steering servo. Awesome speed and torque. Great for pointing those big truck tires in the right direction.
- Reedy* WC Zappers, Sanyo RC-2000 cells and Sonic II 11-turn double modified motor.

specifications

SCALE.....1/10
LIST PRICE.....\$340

DIMENSIONS

Length overall15.75 in.
Wheelbase (at ride height)11.2 in.
Width (F/R)12.5 in.

WEIGHT (gross, RTR).....3 lb., 15.7 oz.

CHASSIS

TypeMolded tub
MaterialNylon composite

DRIVE TRAIN

TypeSealed, 3-gear Stealth tranny (2.4 ratio)
TransmissionMIP CVD drive shafts
Differential(s).....Adjustable Stealth ball diff
Slipper clutchLarge-diameter friction slipper
Bearings/bushingsSealed ball bearings

SUSPENSION (F/R)

TypeIndependent lower arm w/adj. upper link
DampingHard-anodized, oil-filled shocks

TIRES (F/R)Pro-Line XT-R Edge/M2 Mini-Pin

ELECTRICS.....Not included

the competition

Wheelbase

Width (F/R)

Weight

Diff type

Chassis

List price

Available at*

Reviewed in

*Prices vary with location.

Associated
RC10T3

11.2 in.

12.5 in.

3 lb., 15.7 oz.

Ball

Molded composite

\$340

\$199.99*

1/98

Losi
Double-XT 'CR'

11.4 in.

12.5/12.6 in.

4 lb., 3.1 oz.

Ball

Stiffezell

\$359.95

\$209.99*

12/96

PERFORMANCE

My first test of the T3 took place during a club race at R/C Madness in Enfield, CT. The bumpy track is mostly hard-packed clay, but some of the sections are covered with a layer of loose, fluffy dirt. When I reviewed the Associated T2 (September '95), I commented on the vast amount of steering that truck had. I will say the same about the T3. Most noticeable is how well the T3 turns into the corners: very tightly at most speeds and with a nice, smooth radius. There's very little "squaring" of the turn. On-power steering (as when exiting a turn) is also plentiful, but on more slippery turns, the front and rear ends seemed to be trading traction, almost as if the truck's wheelbase was too short. Adding about 2 degrees of toe-in to the front wheels helped diminish this trait and made the truck more stable when exiting turns.

The kit-included Pro-Line tires worked very well during testing. The Mini-Pin rears, which are molded in Pro-Line's M2 compound, provided good forward traction and were very consistent through the bumps. The Pro-Line Edge front tires—molded in the harder XT-R rubber—gave lots of steering on the hard-packed sections of the track but didn't hook up as well in the soft stuff, and that caused a bit of push through the track's S-section



Likes

- Lots of steering
- Super-smooth Stealth tranny
- Great instructions
- Most adjustable Associated truck yet



Dislikes

- Shocks difficult to bleed perfectly

turns. This is kind of funny because I've always thought the opposite, i.e., that harder rubber would work *better* in the soft stuff. It's also possible that the softer dirt allowed the rear tires to gain traction, and this could also cause a loss of steering. Overall, the kit tires can be used to race on most surfaces. For best performance on this track, I'd opt for these tires in the softer and stickier M3 compound.

Newly designed, long-arm suspension geometry makes the T3 more stable through the rough than the old T2. Stability during acceleration is also improved, although once in a while, the T3 likes to lift its front end when coming out of a sharp turn. If you're not ready for it, a surprise wheelie such as this can cause a rollover. To place more weight over the front wheels, I moved the battery from the most rearward position to one that was

(Continued on page 198)



Building & Setup Tips

Building the T3 took me two evenings. The instruction manual is first-rate. Many of the steps include full-size parts legends, and the computer illustrations and photos make it an easy read. Assembly is broken into "bags," so you'll rarely need to open more than one bag at a time—little chance of losing parts. Associated also includes a set of molded tools (they fit the wheel nuts, slipper-clutch adjustment and the shock body and cap) along with the customary Allen wrenches and turnbuckle wrench.

A few words of advice: have a Dremel tool or a small file handy while you build. Some of the parts have excess flashing that you should remove to ensure optimum operation.

BAG C

• Step 2. You don't have to install the no. 4 washer beneath the rear arm mount. It's used to reduce rear anti-squat, which generally makes the truck work better through bumps. If you choose not to install the washer, your truck will have improved acceleration.

Also, do not overtighten the screws that secure the rear arm mounts, as this can strip the mounts. Always check these screws after a few runs, and tighten them if necessary.

BAG D

• Step 10. Use mild thread-lock on the button-head screws that secure the spur gear to the slipper plate. During one race, my T3 developed a nasty clicking sound that turned out to have been caused by a button-head screw that had backed out and been caught between the spur and pinion gears.

FACTORY
OPTIONS

Carbon-fiber:

- Chassis—part no. 7304.
 - Suspension arms—7204 (front), 7339 (rear).
 - Front top plate—9131.
 - Laminated front shock tower—7219.
 - Composite rear shock tower—7349.
 - Battery hold-down strap—7331.
 - Transmission brace—9381.
- Rear suspension-arm mounts:
- 2-degree toe-in/3-degree anti-squat—9266.
 - 3-degree toe-in/0-degree anti-squat—9268.
 - 25-degree caster blocks—7212.

thrash
TEST

1/10 scale electric

KYOSHO

McLaren F1 GTR TF-3

by Peter Vieira



IF YOU'VE BEEN paying attention to our sedan reviews, you've probably noticed that we've had good things to say about Kyosho's* TF (Touring Force) lineup. Kyosho's TF cars are efficient, rugged touring-car platforms that can be purchased in fun-car trim

NOT YOUR MOM'S K-CAR

(EP Spider), inexpensively in competitive racer (TF-2 Race-ready) and all-out speed machine (TF-2 Type R) modes. New to the lineup is the TF-3, which features some interesting design changes that reveal Kyosho's commitment to maintaining the series' high performance level. How high? Keep reading



SCALE 1/10
LIST PRICE \$259.99

DIMENSIONS
 Length overall 18.75 in.
 Wheelbase 10.3 in.
 Width (F/R) 7.75 in.

specifications

WEIGHT (gross, RTR) 3 lb., 5 oz.

CHASSIS

Type Double deck
 Material Fiberglass upper and lower plates

DRIVE TRAIN

Type Belt drive (4WD)
 Primary Pinion/spur
 Transmission 2.2:1 reduction gear
 Differential(s) Front and rear gear
 Bearings/bushings Bearings

WHEELS (F/R)

Type Nylon hex drive
 Dimensions 2x1 in.

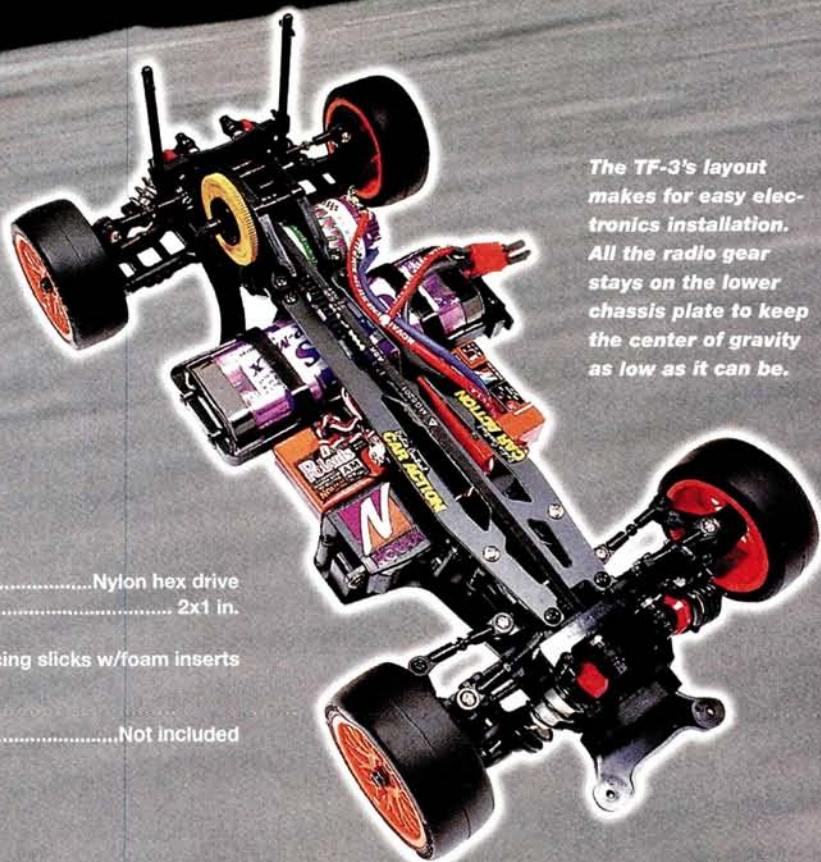
TIRES (F/R) Rubber racing slicks w/foam inserts

ELECTRICS

Motor, battery, ESC Not included

SUSPENSION

Type (F/R) A-arm w/turnbuckle upper link
 Damping Oil-filled, coil-over shocks



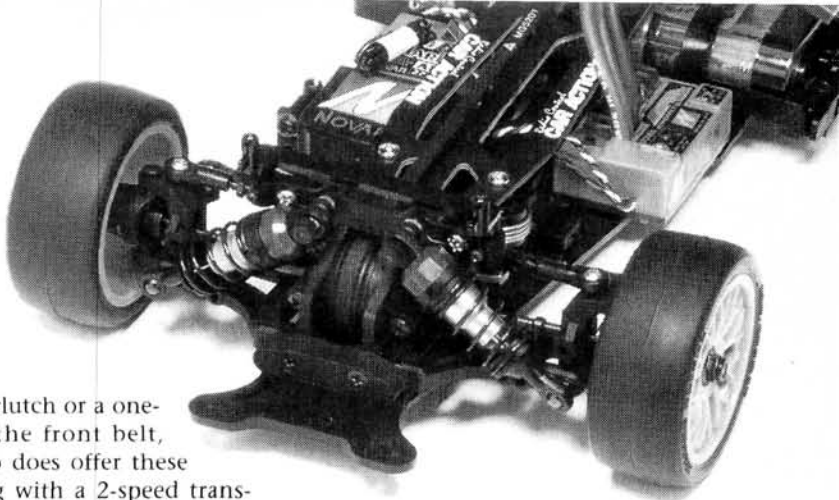
The TF-3's layout makes for easy electronics installation. All the radio gear stays on the lower chassis plate to keep the center of gravity as low as it can be.

THE KIT

• **Chassis.** The original EP Spider sported aluminum chassis plates, while the Race-ready went with an aluminum top plate and a carbon-fiber main chassis. The TF-3 is more conventional: both its upper and lower chassis plates are cut from fiberglass. In addition to the new material, the plates are shaped differently than their predecessors' were. Though its robotech-ish good looks are certainly a welcome plus, the new chassis' primary benefit is improved steering-servo placement. The TF-2 placed the steering servo parallel with the chassis centerline, where it ate up a lot of valuable real estate; in the TF-3, the steering servo is mounted perpendicular to the chassis' centerline and very close to the steering bellcranks; this leaves plenty of room for the receiver and the ESC. As with the TF-2, the TF-3's battery is mounted across the chassis, ahead of the motor. The battery holder is very lightweight and permits both stick- and side-by-side packs to be fitted to the chassis. A simple cam-action clasp secures the battery in place. No less important, in my opinion, is the system's good looks; Kyosho's battery holder looks like an integral part of the car.

• **Drive train.** As with most of the competitive sedans currently available, the TF-3 uses dual drive belts to connect a spur-driven layshaft to the front and rear differentials. The layshaft does not

The TF-3's drive belt can be seen peeking out from between the shock absorbers. Note the front hubs' high degree of offset.



feature a slipper clutch or a one-way pulley for the front belt, although Kyosho does offer these as options, along with a 2-speed transmission. The bulkheads that house the diffs are completely open, so track debris should find its way off the chassis without getting into the belts. The differen-

...the McLaren F1 GTR kit delivers ultra-scale appearance in addition to high performance.

tials themselves are sealed, bevel-gear units that spin on high-quality ball bearings. I realize that many R/C'ers might scoff at the idea of running a car with gear diffs and would look for a ball-diff upgrade before even completing the kit; Kyosho does offer an excellent ball diff for the TF-3, but I'm committed to making the gear units competitive. Think about it: if you could have the handling you needed with the benefits of gear diffs (bomb-proof, sealed, ever-smooth), wouldn't you run them? We'll see how it goes. Steel dogbones and drive cups complete the TF-3's drive train; universal-

THINGS YOU'LL NEED

- 2-channel radio set with one servo.
- Electronic speed control.
- Lexan-compatible paint.
- CA (to glue tires).
- 7.2V battery.
- Battery charger.
- Motor.

FACTORY OPTIONS

- Center one-way unit—part no. KYOC2812
- Two-speed unit—KYOC6163
- Hyper Clutch slipper unit—KYOC5784
- Urethane mini-bumper—KYOC2682
- Carbon-fiber upper plate—KYOC2782
- Carbon-fiber main chassis—KYOC2783
- Carbon-fiber front shock stay—KYOC2778
- Carbon-fiber rear shock stay—KYOC2779
- Universal swingshaft—KYOC6120
- On-road shock tuning springs—KYOC5858
- Hi-grip slicks—KYOC6210
- Hi-grip supernarrow slicks—KYOC6237
- Supernarrow soft slicks—KYOC4891
- Supernarrow medium slicks—KYOC4892



Building & Setup Tips

BUILDING

I found the TF3 to be a quick and easy build, due in no small part to Kyosho's well-illustrated manual. I found only two minor sticking points:

- Step 24 calls for the steering bellcranks to be assembled on aluminum posts; the process is easier if you first mount the posts to the chassis. Note also that the no. 79 spacers are on the parts tree with the plastic nuts; I looked all over the place before I spotted them!
- Step 29: the shock-assembly instructions show a pair of needle-nose pliers being used to install the C-rings in the shock bodies. It's actually easier to do this by hand; just tuck one end of the clip into the shock body's groove, then "walk" it in with your thumb until it snaps into place. Also, to avoid tearing their seals, give the O-rings a drop of oil before you pass the shock shaft through.

SETUP

As noted in the "Performance" section of the test, the TF-3 was not a sure-footed handler with the factory setup in place. Thankfully, bringing the TF-3's handling up to speed with racecar standards proved easy and inexpensive. Here's the recipe:

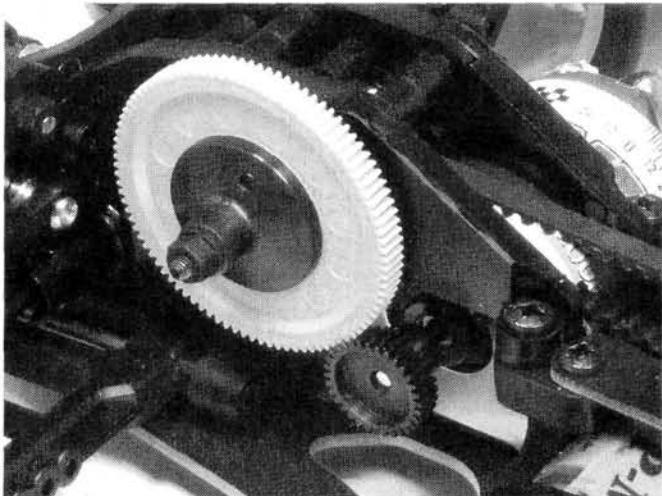
- **Add sticky tires.** Kyosho's kit slicks provided little grip on the R/C CAR ACTION test lot, so I added a set of Pro-Line's new S2 Sedan Slicks (on their new Warlock wheels). Although this was not the quick fix I had hoped for, the new tires did make the TF-3 much more tractable. High-speed sweepers could be negotiated without losing the car to oversteer, but tight point-and-squirt roadcourse work still required a very steady hand. Chassis setup changes were in order.
- **Increase shock damping.** The TF-3's spring rates are acceptably stiff, but the shocks are under-damped and allow too much chassis pitch and roll. To remedy this, the stock green

shock oil was drained and replaced with Trinity 55WT silicone oil. Although no viscosity number was given for the kit oil, I gauged relative viscosity by noting how quickly air bubbles rose through the two types of oil. Slightly softer springs in the rear might also help the TF-3 to feel more "locked in." Kyosho offers springs of various rates as options.

- **Tighten the differential action.** Tempting as it was to replace the gear units with Kyosho's ball differentials, I instead chose to "tighten" the diffs by repacking the diff cases with heavy grease; I used a high-quality bicycle-bearing grease to get the job done. To be sure the internal diff gears didn't displace all the grease and become loose again, I filled the diffs to capacity. When the diff-case halves were joined, grease shot out of the screw holes like out of a Play-Doh pumper, so I knew they were full! The completed diffs were still smooth but had much more resistance.

joint axles would have been nice up front, but the precise fit of the dogbones should result in smooth power delivery, nonetheless.

• **Suspension.** The TF-3's shock configuration departs from the TF-2's layout, eschewing the "standup" shock position in favor of a more laid-down attitude. The shocks themselves are as sweet as they come, with precisely machined aluminum bodies, bottom-loaded seals, cool-looking, red-anodized caps and an assortment of preload spacers. Easily assembled and lightweight, the completed units are very plush.



It looks as though there could be a slipper pad under there, but the TF-3 is direct-drive all the way.



Likes

- Looks great—with or without the body.
- Simple, reliable battery tray accommodates stick- or side-by-side packs.
- Ultra-smooth shocks.



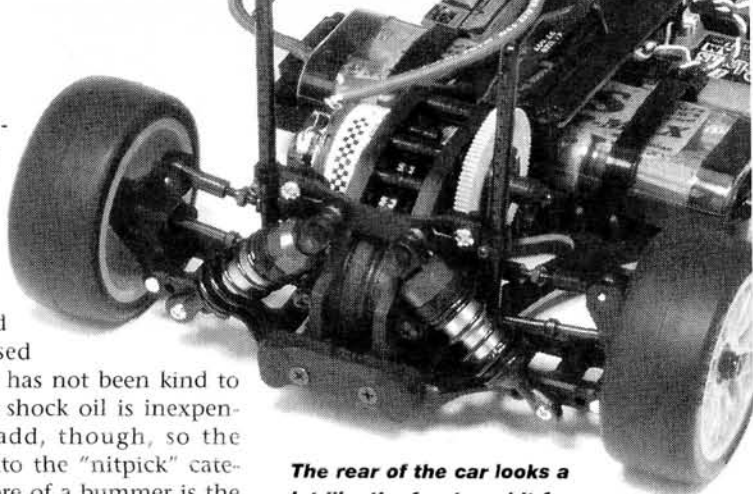
Dislikes

- No gripes about the kit's quality, but the omission of ball diffs and universal-joint drive shafts is a disappointment; even a single ball diff and front-only universal joints would be welcome additions.
- Under-sprung, under-damped suspension in stock form.

Green, medium-weight shock oil is included to fill the dampers, but it's definitely old-tech and too thin; my first car (Ultima II, circa 1992) included this petroleum-based pea soup, and time has not been kind to it. Modern silicone shock oil is inexpensive and easy to add, though, so the crummy oil falls into the "nitpick" category. Somewhat more of a bummer is the lack of shock-piston options; unless you purchase accessory pistons, damping adjustments are limited to shock-oil viscosity changes. The kit's green oil/two-hole piston combo made the shocks feel under-damped (as measured by my highly accurate thumb-and-forefinger squeeze test), but Kyosho says this is the way to build 'em, so that's how I built 'em.

To articulate the shocks, there are lower A-arms with turnbuckle camber links at each end of the car. Each suspension arm features two sets of holes for its respective hub; this allows the TF-3 to be built "wide" (200mm) or "narrow" (190mm) by selecting either the inboard or outboard hole. Speaking of hubs, the TF-3's hex-hubs will accept just about any aftermarket sedan wheels, although you'll have a hard time topping the included pumpkin-orange units (they match the McLaren's paint scheme). Kyosho's Racing Slick tires are included along with strip-type foam inserts to complete the rolling stock.

• **Body.** As a member of Kyosho's PureTen line, the McLaren F1 GTR kit delivers ultra-scale appearance in addition to high performance. Kyosho includes all the niceties that make it easy for just about any schlub to get concours-winning



The rear of the car looks a lot like the front, and it features the same ultra-smooth, aluminum-body dampers.

results. Window masks, headlight buckets and a comprehensive decal sheet, along with injection-molded rearview mirrors, windshield wiper, adjustable rear wing and roof-mounted air intake all add to the scale realism of the completed machine.

To help keep the body looking its best, the body posts feature paint-friendly, molded-in pegs to support the shell. To adjust height, the posts use individual brackets that allow the posts to slide up and down, while a setscrew secures them in the desired position and allows fine adjustments to be made.

TEST GEAR

The arrival of the TF-3 coincided with that of a bunch of very nice goodies that came my way, all of which found a home in Kyosho's latest. Fantom's* 13-triple Pro Series modified motor will be a good test for the TF-3's drive train. This hand-wound, Trinity D2-based grenade should have no problem getting the car around the *R/C Car Action* parking lot in a real hurry. A racing chassis deserves a high-quality ESC, and Novak's* newly revised Tempest speed control is a perfect choice. Now known as the Tempest MAX, it features new Hyperfet III transistors, a built-in Schotky diode and 42-percent less "on" resistance than its predecessor, which was already very efficient! I mated Tempest MAX with another piece of orange high-techery from Novak: their Polaris AM receiver. Last, I added a Futaba* S3003 steering servo and dialed everything in with an Airtronics* Rival RV2P radio. Then it was time to head for the track!

PERFORMANCE

My first excursion with the TF-3 was a quick, lunch-hour test session at the official *R/C Car Action* test lot. It was readily apparent that the stock-chassis setup was way off the mark; the tires lit up very easily, and the car spun with little provocation. Although part of the trouble can be traced to the use of relatively hard slicks on less-than-clean pavement, other factors were definitely at work, too. Diff unloading

(Continued on page 207)

the Competition	Kyosho TF-3	Yokomo YR-4 II	Tamiya TA03F-Pro	Schumacher SST 2000
Wheelbase	10.3 in.	10.25 in.	10.1 in.	10 in.
Width (F/R)	7.75 in.	7/7.125 in.	7.19 in.	7.125 in.
Weight	3 lb., 5 oz.	3 lb., 2 oz.	3 lb., 8.7 oz.	3 lb., 7.3 oz.
Diff type	Gear	Ball	Ball	Ball
Chassis	Double deck	Fiberglass	FRP**	Fiberglass
List price	\$259.99	\$250 (est.)	\$356	\$319.50
Available at*	\$219.99	\$140 (est.)	\$199.99	\$190
Reviewed in	1/98	10/97	10/96	12/96

*Prices vary by location. **Fiberglass-reinforced plastic



HPI Nitro Mini

**GOOD
THINGS
COME IN
SMALL
PACKAGES**

by
George Gonzalez

AFTER THE SUCCESS of its Nitro RS4 glow-powered touring car, HPI* carefully studied the latest trends in R/C and discovered another area of potential growth—nitro-powered 4WD minicars. The electric Minis are fun, so a gas machine seemed like a natural. Let's take a look at the Nitro Mini RS4.

HPI's Nitro Mini is basically a scaled-down version of the company's Nitro RS4; this means that both cars share many of the same parts. The Nitro Mini uses the same easy to start and tune Nitro Star .12 engine as the Nitro RS4, so first-time gassers will have no problems getting their cars up and running. In fact, HPI designed the Nitro Mini with first-time builders in mind and took pains to ensure that the kit is extremely easy to assemble.

Want to know more? Read on. I provide some overall driving impressions and tips that will make owning the Nitro Mini RS4 even more pleasurable.



KIT FEATURES

Among the parts that are interchangeable between the Nitro RS4 and the RS4 Mini are all four shocks; front and rear bulkheads; diffs and body mounts; front uprights and steering blocks; rear shock tower, axle carriers and chassis brace; disk-brake mechanism; bushings/bearings; engine, fuel tank, spur gear and drive pulleys; and center shafts. This is great for hobby stores because they won't have to stock so many parts. When it's time to replace a worn or broken part, hobbyists shouldn't have any problems finding replacements, either. Looking to hop up your Mini? Well, many of the Nitro RS4's hop-ups will work equally well on the Nitro Mini.

- **Chassis.** A lightweight, 2mm-thick aluminum plate is the foundation for mounting the drive train and suspension. The chassis sides are bent upward for increased rigidity. Openings under the front and rear diffs allow small debris to exit instead of becoming lodged under the diff gear and drive belt.

If you want to upgrade to a competition-type, non-pull-start



The plastic shocks are smooth performers and could be tuned for specific racing applications. I later replaced the soft silver front springs with HPI's firmer green springs (optional) to remove some of the steering. Love that nifty front bumper.

wear, you'll need to adjust the brake-pad tension from time to time, so you'll appreciate this feature.

• **Drive train.** The Nitro Mini features the same triple-belt drive system and disk-brake mechanism as the Nitro RS4. The only difference is that shorter front and rear drive belts are used to accommodate the Mini's shorter wheelbase. Easy to build, high-quality bevel-gear differentials are at both ends of the car; they're virtually maintenance free (perfect for first-time builders). The entire drive train spins on metal bushings, and the front and rear outdrive bushings receive the extra benefit of spinning on hard metal sleeves. Overall, the Nitro Mini's drive train is incredibly smooth, and it can be made to perform even more smoothly with the installation of bearings.

The Nitro Mini uses the same ultra-smooth disk-brake mechanism as the Nitro RS4. The brake disk is molded out of the same, high-fiber plastic that's used for the clutch shoes; it provided extremely linear braking control during all my tests. I particularly like that, to access the brake-pad tension screws, no disassembly is required. To compensate for normal disk

• **Engine.** The Nitro Mini RS4 also uses the same potent yet user-friendly Nitro Star .12 engine as the Nitro RS4. I've used it in my Nitro RS4 for months, and it's one of the most reliable glow engines I've ever owned. There's no bottom-end adjustment screw on the carburetor, so the only adjustment you'll have to worry about is the high-end needle valve. Excellent engine break-in instructions provide first-time gassers with the basics on how to tune the 2-stroke nitro engine for maximum reliability and performance. The engine also includes a rugged pull-start mechanism, a 75cc quick-fill fuel tank with a priming button and a really trick 2-piece air filter.

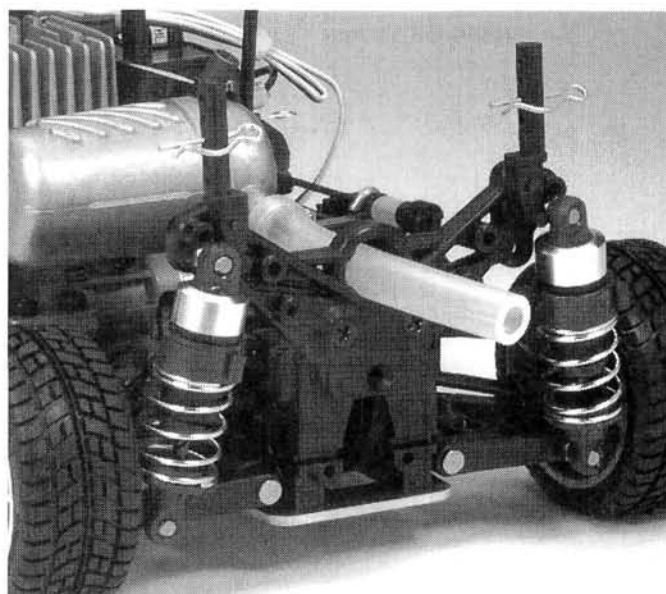
• **Suspension:** The Nitro Mini achieves its narrow stance with the help of new, super-short suspension arms. You can adjust the car's wheelbase according to how you install the rear suspension arms. The included Honda Civic body calls for the longer 225mm wheelbase; however, if

you reverse the suspension arms, you'll have a shorter, 208mm M-scale wheelbase—a great feature because you'll be able to use many of the bodies that are available for Tamiya's* popular M-chassis car line.

You'll find oil-filled, plastic-body shocks with coil-over springs on both ends of the car. The shocks are easy to build, and they provide smooth, leak-free damping. HPI got the spring tension just right and equipped all four shocks with soft silver springs. The included petroleum-base shock fluid is not of the greatest quality and it smells pretty bad, but it does do a fair damping job. If you have some 40 to 50WT silicone shock fluid, you might want to use it instead. I was very pleased to see that HPI decided to give the Nitro Mini non-adjustable molded upper control links instead of the threaded rods and ball cups that are found on the Nitro RS4. Threading ball cups onto control rods is a pain for most beginners, and their cars frequently end up poorly aligned because they didn't have the right tools to measure camber accurately. My hat is off to HPI for making the Nitro Mini RS4 as user-friendly as it can be.



The HPI Nitro Star .12 is an absolute gem. It's easy to tune, reliable and powerful. First-time gassers will find the engine exceedingly user-friendly. The 75cc fuel tank provides about 8 to 10 minutes of run time, which means fewer fuel stops.



The rear end uses similar short suspension arms and molded upper links as well. The Super Radial tires work well in most situations and last a long time. The soft silver springs are the perfect choice for the rear shocks. Check out how the muffler tube exits through the shock tower—pretty trick.

• **Other goodies.** The Nitro Mini RS4 includes one of the coolest Honda Civic bodies around. It comes with a separate spoiler and wing that not only look great but also provide extra rear downforce. I tried the body without the spoiler and wing and discovered that the car feels more stable with the wing attached. The body comes with a complete set of decals, so an elaborate paint scheme is not necessary. HPI's Kent Clausen was kind enough to paint the body for me; the orange, yellow and white Tide-box paint scheme is kind of a Clausen trademark. Those of you who remember the early days of R/C may be familiar with Kent's super-fast oval cars, all of which sported Tide racing colors.

Also included in the kit are a complete set of white-spoked wheels and M-Compound super radials. The kit-supplied tires are a little bit harder than HPI's optional Super Compound Radials; however, the stock tires provide adequate grip on most tracks surfaces, and they last a long time. You may later want to experiment with softer compounds for the utmost in control and handling. Overall, the Nitro Mini RS4 is a very complete kit, so you'll need only a few extras to get started.

Right: here's the Nitro Mini's ultra efficient, triple-belt drive system. Yes, it's very similar to the Nitro RS4's drive system.

Below: notice how the servo is mounted vertically? There's just no room to mount it flat on the chassis.



TEST GEAR

- Hitec Lynx transmitter and HAS2MB receiver.
- Hitec HS303 steering and throttle servos.
- Hobbico* glow-plug igniter.
- Hobbico fuel bottle.
- Hobbico fuel filter.
- Blue Thunder* 20-percent-nitro fuel.
- McCoy* MC-8 glow plugs.



Likes

- Irresistible size.
- Cool Honda Civic body.
- Attractively priced.
- Easy to build.
- Easy to tune.
- Extremely reliable engine.
- Great instructions.
- Extremely efficient triple-belt drive system.
- Fun to drive.
- Many parts are compatible with the Nitro RS4.



Dislikes

- Some of the molded pieces were hard to remove from the part trees.
- Funky-smelling shock oil.



Building & Setup Tips

The Nitro Mini RS4 is an easy-to-build, glow-powered R/C kit suitable for beginners. Its engine is easy to tune and incredibly reliable—perfect for first-time gassers. The instructions provide clear illustrations, parts-identification sidebars and concise text to guide you through every step of the building process; you'll also find a handy, full-size parts-identification chart that makes it easy to select the right fastener. I highly recommend that you build the Nitro Mini RS4 exactly as directed in the instructions; be sure to read the update sheet for revisions. Here are a few additional building and setup tips that I thought might be worth passing on.

• Use side cutters to remove tree-mounted parts; then file off any remaining flashing with a fingernail file. Some of the tree-mounted parts are a little stubborn.

• Step 1. To limit up-travel, be sure to install spacers as directed on the outside of the front shock shafts.

• The supplied petroleum-type shock fluid will work just fine, but you may want to experiment later with high-quality silicone shock fluids of different viscosities.

• Use plenty of grease inside the bevel gear differentials, and don't forget to lube all the metal bushings.

• Step 6. Assemble the rear suspension according to the 225mm (Honda Civic) instructions. If you plan to install a Mini Cooper body, or any other M-scale body, build the rear suspension according to the 208mm instructions.

• Step 8. Note that plastic washers are installed in front of the front suspension-arm mounts. If you plan to use an M-scale body, install the washers behind the front suspension-arm mounts.

• Step 9. Don't forget to install the two orange O-rings inside each front drive cup—very important.

• Step 10. Use liquid thread-lock on the four Z543 machine screws that secure the engine to the aluminum engine mount. Also, be sure to grease the needle bearing inside the clutch bell.

• Step 11. Apply a few drops of liquid thread-lock to the long A870e machine screw that holds the two muffler halves together; apply a light coat of silicone or RTV around the seam on the outside of the muffler after the two pieces have been joined; apply silicone or RTV around the area where the muffler is connected to the exhaust port; apply a

few drops of liquid thread-lock on the two Z509 machine screws that secure the muffler to the engine block and to the four Z517 machine screws that secure the engine to the chassis.

• As an extra precaution, you might want to seal your receiver and receiver batteries in separate balloons to protect them from fuel spills.

• Always use a clean, freshly lubed air filter when operating the vehicle. While we're on the subject of filters, do your engine a favor and install a fuel filter on the fuel line that leads to the carburetor.

• Make large openings in the front windshield and driver's-side window to allow air to flow around the engine. It's a good idea to drill holes in the rear window to allow air to exit as well.

• Always run the engine slightly rich.

• After every thrash session, put a few drops of after-run oil into the carb's venturi and a couple more drops down the glow-plug opening; then turn the engine over for a couple of revolutions. Also, remove the air-filter element and clean it well in soapy water, then set it aside to dry. When it's dry, apply a few drops of after-run oil on it and reinstall it on the air-filter housing.

• The clearance behind the front shocks and front shock tower is tight. You may experience a slight binding problem when using HPI's optional, powder-coated tuned springs. To remedy this slight ailment, install a couple of 1/8-inch spacers behind the upper ball joints where the top of the shocks snap onto the ball joints. You can also grind the area on the shock tower where the shock rubs against it.

• The Nitro RS4's optional swaybars will work well on the Nitro Mini; however, you will have to bend the ends of the swaybar slightly inward to account for the super-narrow suspension arms. HPI is revising the instructions that come with the swaybars to include Nitro Mini installation tips.

PERFORMANCE

My first experience with the Nitro Mini RS4 was on a parking lot adjacent to the HPI facility in Irvine, CA. Kent Clausen handed me the controls of his freshly built Nitro Mini and told me that the engine was only slightly broken in. I found his Mini very responsive, and it offered brisk, yet easy to control performance. I did notice, however, that the engine quickly wound out, and that led me to believe that the car was undergeared. The stock M-Compound rubber tires provided plenty of bite on the generally crummy asphalt surface, and the car was easy to maneuver around the imaginary course.

I left the HPI facility with a brand-new Nitro Mini RS4 under my arm, and I was eager to get home to build it. Within a few hours, I was breaking in the engine. After the fifth tank of fuel, I started to lean the engine out a little bit at a time while I constantly checked its temperature. That's when I discovered the alternate personality that lurked within the little 12's cylinder walls. I'll say this much: my Nitro Mini was a heck of lot faster than the one I had driven earlier that day. After I had found the sweet spot on the carb's needle, I continued to run my Nitro Mini for what seemed like hours. When I realized that it was 11:30 p.m., I figured it was

too late to be running it up and down the street. I got no complaints, though, which suggests that the Nitro Mini is one quiet performer.

The next day, I raced my Nitro Mini at a local Hobby Shack* parking-lot race. Several HPI team drivers were there to compete in a Nitro Mini exhibition race, so I got the opportunity to run with nine others on a technical roadcourse. Before the event, I installed a set of ball bearings, mounted HPI Super Compound radial tires on all four corners and a pair of slightly firmer, HPI Green front tuned springs. I also set up all four shocks with HPI's optional Teflon-coated no. 4 pistons and Trinity* 55WT silicone shock fluid.

With this setup, I was able to negotiate the technical sections of the track without worrying about whether the car would have enough steering to make the next corner. Going down the long straightaway at full speed, the car felt extremely stable, and the Mini's disk-brake system provided smooth and controlled braking at all times. I noticed, however, that the car had considerable chassis roll when it entered and exited tight corners with speed; this led to occasional spinouts when I was a little overzealous with the throttle trigger. Installing a rear ball diff will remedy this slight ailment, though. I also noticed that some of the other Minis that I was competing against were considerably faster on the top end. I later discovered that some of the racers had replaced their Minis' stock 13-tooth clutch bells with larger, optional, 15-tooth units (live and learn).

FINAL THOUGHTS

Even though the Nitro Mini RS4 is fast and handles well, the Nitro RS4 will feed taillights to it all day long. With its shorter wheelbase, narrower width and smaller tires, the Nitro Mini is no match for the larger, purpose-built Nitro RS4. But racing really isn't what the Nitro Mini RS4 is all about; it's about having fun for hours at a time. Of course, if someone started a racing class for nitro-powered 4WD mini cars, you could bet that the Nitro Mini would be a major player. The Nitro Mini is capable of achieving respectable top speeds, although it's not fast enough to be in the "dangerous" category. Add to this the fact that the kit is easy to build, tune and maintain, and you have the makings of a first-rate gasser.

*Addresses are listed alphabetically in the Index of Manufacturers on page 248.

THINGS YOU'LL NEED

- 2-channel radio system with two servos.
- 12 AA batteries.
- Glow-plug igniter.
- Glow-plug wrench.
- Model car fuel 20-percent nitro content recommended.
- Fuel bottle.
- After-run oil (highly recommended).
- Paint for the Lexan body.
- CA for the tires.
- Liquid thread-lock.

FACTORY OPTIONS

- Ball-bearing set—part no. B041.
- Super shock set (hard-anodized, set of 2)—A111.
- 39-tooth ball diff—A905.
- 2-speed tranny—A910.
- Lightweight flywheel—A925.
- Graphite front shock tower—A570.
- Graphite rear shock tower—A218.
- Swaybar kit—A209.
- Graphite rear brace—A935.

Authorized **SANYO** Distributor



Single Cells (w/o tabs)

Model #	1.2V/MAH	DxH(mm)	WT(g)	Price
N-50AAA	50	10.0 x 15.0	3.5	\$2.00
N-110AA	110	14.0 x 16.5	8	2.00
N-600AA	600	14.0 x 49.5	24	1.60
KR-800AAE	800	14.0 x 50.0	28	2.50
KR-1100AAU	1100	14.0 x 50.0	27	3.00
N-225AE	225	16.5 x 16.3	12	3.00
KR-600AE	600	16.5 x 27.8	22	2.25
N-1000SCR	1000	22.0 x 33.0	39	4.20
KR-1300SCR	1300	22.0 x 42.0	48	2.80
N-1400SCR	1400	22.0 x 42.0	52	4.20
RC-1700	1700	22.0 x 42.0	54	5.50
N-1700SCRC	1700	22.0 x 42.0	55	5.50
RC-2000	2000	22.0 x 42.0	58	7.50
KR-4400D	4400	32.3 x 61.0	150	9.50

Sanyo / GE alkalines are now available through CERMARK
Please add \$0.20 per single cell with Solder Tabs

Power Packs (Flat or Hump)

Model#	V/MAH	LxWxT(mm)	Price
8N-600AA-4(TYCO)	9.6V/600	102 x 56 x 14	18.00
6N-1000SCR	7.2V/600	106 x 46 x 23	28.00
7N-1000SCR	8.4V/1000	125 x 46 x 23	32.00
6N-1500SC(Sports Pack)	7.2V/1500	135 x 46 x 23	15.00
6N-1400SCR	7.2V/1400	135 x 46 x 23	28.00
7N-1400SCR	8.4V/1400	150 x 46 x 23	32.00
6RC-1700	7.2V/1700	135 x 46 x 23	39.00
7RC-1700	8.4V/1700	150 x 46 x 23	44.50
6N-1700SCRC	7.2V/1700	135 x 46 x 23	39.00
7N-1700SCRC	8.4V/1700	150 x 46 x 23	44.50
6RC-20000	7.2V/2000	135 x 46 x 23	49.00
7RC-20000	8.4V/2000	150 x 46 x 23	56.50

Tamiya Conn. comes standard with all Power Packs

Packs For Radio (Flat or Sq.)

Model#	V/MAH	LxWxT(mm)	Price
4N-600AA	4.8V/600	56 x 50 x 14	9.00
4N-225AE	4.8V/225	67 x 17 x 17	12.00
4KR-600AE	4.8V/600	67 x 28 x 17	12.00
5N-50AAA	6.0V/50	50 x 15 x 10	10.00
5N-600AA	6.0V/600	70 x 50 x 14	9.00
5N-225AE	6.0V/225	83 x 17 x 17	12.00
5KR-600AE	6.0V/600	83 x 28 x 17	12.00
8N-600AA-1	9.6V/600	100 x 29 x 29 (w/wire)	18.00
8N-600AA-3	10.2V/600	116 x 50 x 14 (w/wire)	18.00
8N-600AA-4	10.2V/600	100 x 56 x 14 (w/wire)	18.00

* Add \$4.00 to Connect Specific Radio Connector
* Call us if you can not find your Sanyopack on this list.

Hitec (Servos & Radio systems)

MODEL #	DESCRIPTION	PRICE
HS-85BB	Mighty Micro Servo wtop BB (38oz)	32.95
HS-205-BB	Super Mini Low Profile Servo (42oz)	27.55
HS-300	Stuper Sport Servo (42oz)	10.95
HS-425BB	Pro Servo with Dual Ball Bearing(43oz)	18.95
HS-605BB	Ultra Torque Servo (77oz)	36.95
HS-605MG	Ultra Torq. Servo (all metal gear)	46.55
HS-615MG	Super Torq. (metal gear - 107oz)	46.55
HS-700BB	Giant Scale Servo (133oz)	29.55
Shredder Rx	Micro Shredder Receiver (all brands - 75mHz)	31.95
RXT0475	75mHz AM single conv. Tx & Rx set	8.50
HR50475AM	Lynx AM (75mHz) Radio System	59.95

* Call us if you can not find your Hitec item on this list.
* Please specify the desired connector on your Hitec unit.

Gold Plate Connectors

Male servo lead 12"	2.50
Male battery lead 12"	2.50
Female 3 wire 12"	2.75
Female 2 wire 12"	2.75
Extension 6"	4.00
Extension 12"	4.50
Switch w/charger wired	8.00
Exchange adaptors (servo-rx)	4.00
JST (BEC) male / female set	4.00
Dean Ultra Plug (set)	3.00
Anderson Conn. (Sermos) (Set)	3.25
Dean Ultra Plug (set)	3.00
Tamiya set w/o wire	3.25
Gold plated copper bars x 6	3.00

* Available for Futaba G.I. Airtronics, J.R. Hi-Tech, World-Eng.

* Prices Effective 8-1-97 and subject to change without notice
* Visa & Master card accepted (\$ & H is \$5.99)
* \$ & H is \$5.99 and UPS Cod Cash is \$5.99 for any size order
* All returns subject to inspection and 15% restocking fee

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DEALERS & MATCHERS INQUIRIES WELCOME

READER'S RIDE OF THE YEAR

by Peter Vieira

Gordon Pettway's

YOU'RE into R/C, so you no doubt have a fantasy project or two rattling around in your imagination with a bunch of "somedays" attached to them. You know what I mean: someday, I'll learn to machine stuff; someday, I'll have the money; someday, they'll invent miniature nuclear reactors. Once in a while, though, someone comes along with the talent to

make his dream machines become reality. Gordon Pettway is just such a modeler. If his name sounds familiar, it's because Gordon is the man behind the wild, 1/8-scale, nitro drag truck we featured as a "home-built" in our August '97 issue. Gordon returns to the drag strip with his "Reader's Ride of the Year" winner—a wild .21-powered dragster!

THE KIT?

Although Gordon's machine bears the finished look of industrial production, it was almost completely hand-built. The list of parts pirated from other vehicles is quite short: the steering knuckles, rear axle supports and transmission gears are virtually the only chassis bits that Gordon didn't mill or turn himself. As you can see in the photos, the quality of the car is incredible.

- **Chassis.** The backbone of this quartermile machine was cut from two pieces of G-10 "fiberglass," which isn't actually fiberglass but an epoxy



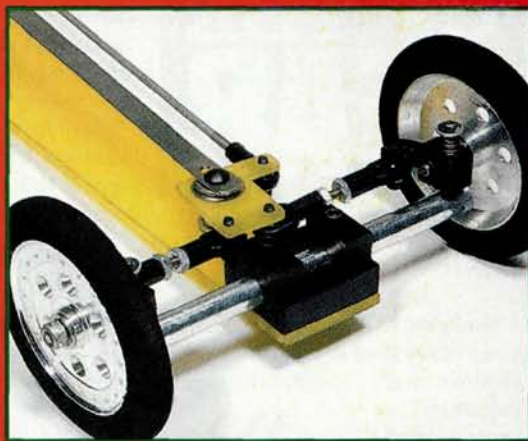
Gordon is pretty humble about his work and is down-right philosophical (or theological) about taking credit. He chooses instead to defer his success to the ultimate scratch-builder: "I thank God that I have my talent and ability," he says. Amen!

composite. Gordon obtained the material from Modern Plastics, hand-cut the components with a hacksaw (!) and finished them off with a file. The lower plate is 1/8 inch thick and the upper deck is 1/16 inch. Cutouts allow the steering and throttle servos to poke through the top plate, while a longer channel secures the billet-aluminum fuel tank. A strip of thin stainless steel braces the chassis nose but still allows flexibility. The chassis was not designed to be stiff; it flexes as the prodigious torque of the rail's .21 engine tries

1/8-SCALE RAIL



Left: Gordon's highly professional work is showcased in this jewel-like drive train. Right: glistening, machined front wheels and an elegantly simple front end keep Gordon's dragster pointed in the right direction.



to flip the car around the rear axle. When Gordon launches his machine, the chassis arches in the middle like a scared cat!

A wheelie bar made of silver-soldered $\frac{3}{32}$ -inch music wire keeps the rear wheels planted and features foam, $\frac{1}{24}$ -scale slot-car wheels. The wheelie bar is bolted to a rear deck made of $\frac{3}{32}$ aluminum sheet that acts as a heat sink for the engine and provides a solid platform for the drive train.

When it comes to power, this nitro rail defines the word "overkill." Gordon contacted JR at Ace Hardware & Hobbies* and purchased a Paris* P6 Turbo .21 engine to power his creation. He mated it with a custom dual-exhaust pipe with integral header. The Paris mill is plenty powerful and can usually be found cranking 8-pound $\frac{1}{8}$ -scale cars to speeds in excess of 60mph. At a little over 4 pounds, Gordon's dragster weighs half as much as those machines!



A custom 2-speed tranny gives this nitro machine plenty of top-end speed.

just when you think it can't go any faster—it upshifts. Gordon custom-machined the 2-speed mechanism out of billet aluminum and used two BMT gears to mate with the dual-gear clutch bell. Held on the chassis by custom-milled aluminum supports, the 2-speed layshaft spins a single, 9mm, Gates belt that, in turn, is connected to the solid rear axle via a large-diameter pulley. This piece began life as a stock aluminum pulley from PIC Design. It was relieved of all excess material courtesy of Gordon's machine work. The custom rear axle is secured to the chassis by aluminum axle blocks that were lifted from an Associated* RC250. A local contractor, American Anodizing, handled the purple touches on

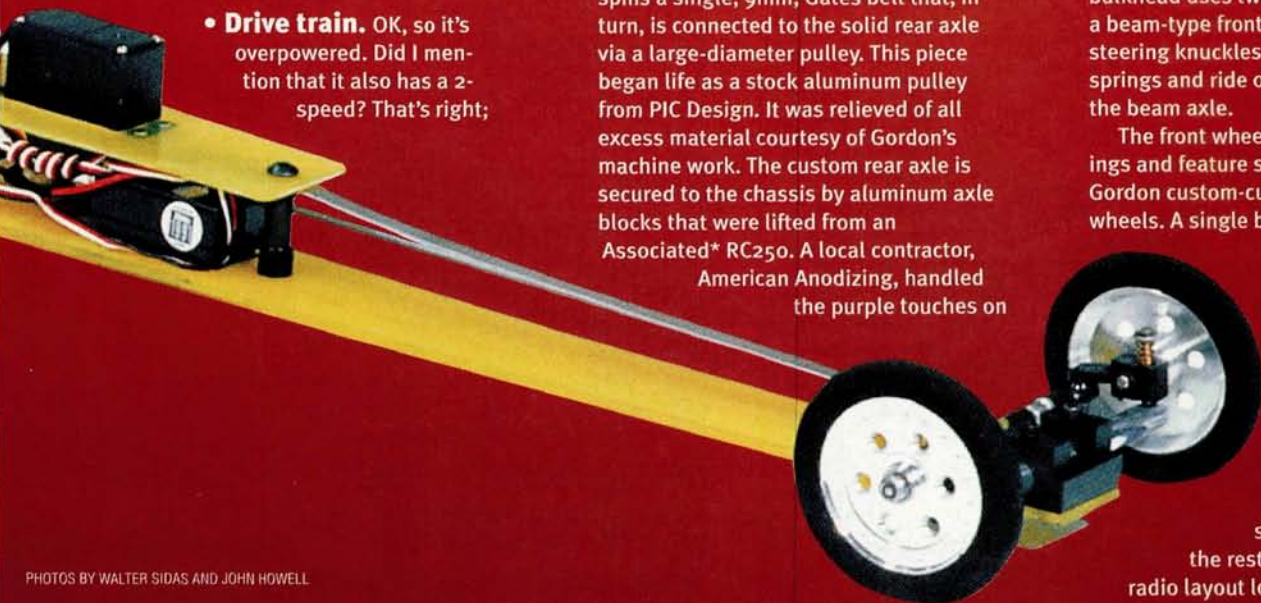
the axle blocks, motor mounts, and heat-sink head. Garrick Machine created the aluminum mounts for a small belt-tensioning pulley between the motor and rear axle. The mounts are the only pieces Gordon didn't machine himself!

• **Steering and braking.** When you have an R/C vehicle capable of exceeding 90mph, you definitely want to keep a tight grip on the reins. With that in mind, Gordon made a trick dual-disk-brake setup to stop his machine. Three titanium caliper plates give the squeeze to a pair of thick, aluminum, ventilated disks, while a plate titanium mount holds the assembly on the right rear axle mount. The calipers are activated by a ball-bearing-supported cam that provides powerful, easily modulated braking.

Steering is no less important to danger avoidance, and Gordon rose to the occasion here as well. A chunky front bulkhead uses two pinch bolts to secure a beam-type front axle. Pan-car-type steering knuckles are supported by coil springs and ride on kingpins screwed into the beam axle.

The front wheels are aluminum turnings and feature skinny foam tires that Gordon custom-cut for the narrow wheels. A single bellcrank cut from G-10 actuates the front wheels via a pair of turnbuckle tie rods. Rocket City* captured ball ends link the bellcrank to the steering servo and are also used to link the brake system to its servo. Like the rest of the car, Gordon's radio layout looks totally factory!

• **Drive train.** OK, so it's overpowered. Did I mention that it also has a 2-speed? That's right;

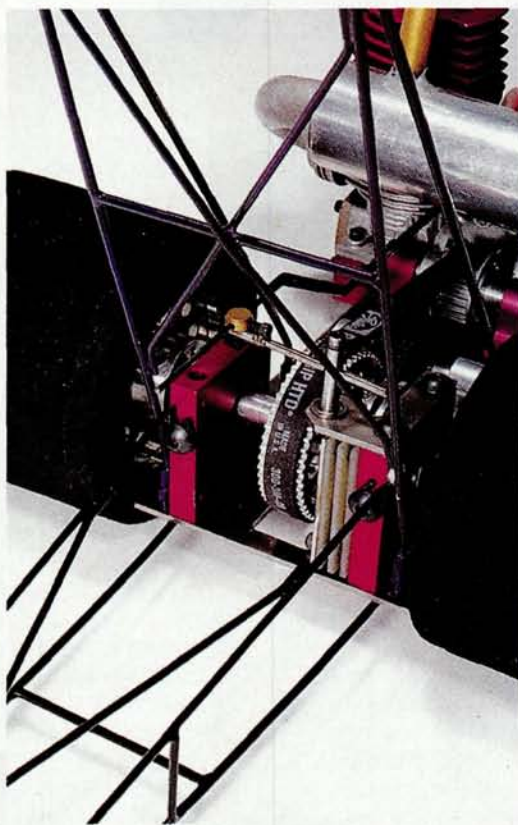


READER'S RIDE OF THE YEAR

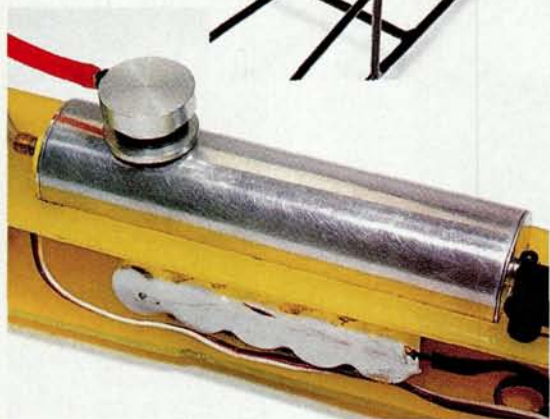
Magnum FM radio was pressed into service along with its FP-R113F receiver.

• **Bodywork.** A plain-Jane body just wouldn't do this finely crafted piece of automotive artwork justice, so Gordon got in touch with our very own contributing author Greg Vogel to lay some paint down on a Protoform* Top

Fuel 1 rail body. As usual, Greg came through with a hot-looking finished product! Although Gordon stepped aside for body detailing, the metal master did take on the wing. The tall rear wing is not a Lexan piece but actually sheet aluminum pieces pop-riveted together. The wing is held high in the airstream by a music-wire wing support that was constructed in the same way as the wheelie bar.



Above: there's a lot happening here—note the music wire wheelie bar and wing support, triple-caliper titanium brake and turned-down drive pulley.



The billet fuel tank holds enough go-juice for plenty of blazing quartermile runs. Heck, you can hot lap this thing!

*Addresses are listed alphabetically in the Index of Manufacturers on page 248.

• **Radio gear.** To operate the steering and braking, Gordon installed Tower Hobbies** TS-55 "standard" servos. Steering demands are light on a dragster, and with dual disk brakes, you don't need high-torque servos to get powerful braking!

Gordon had no desire to allow a radio glitch to reduce his pride and joy to a wad of aluminum and fiberglass, so a Futaba*

THE WINNERS

First Place

Gordon Pettway, Bridgeport CT

There's a whole article singing Gordon's praises, so we'll skip right to the good stuff: the loot!

- \$500
- Novak Cyclone programmable ESC
- Novak Pit Wizard
- Mercury FM receiver
- Novak USA T-shirt
- Novak USA hat
- Novak decal pack

Total Value: over \$1000



Second Place

Dan O'Neil, Southerton, PA

Dan certainly impressed us with his beautiful pumper tank model, derived from Tamiya's King Hauler 1/4 scale semi. For his efforts, we're sending Dan the following goodies:

- Novak Super Rooster ESC
- Mercury FM receiver
- Novak T-shirt
- Novak hat
- Limited edition Novak decal pack

Total Value: over \$350



Third Place

David Furst, Sebastopol CA

We think David has got the wildest creation this side of the Mystery Science Theatre invention exchange! Let's see, two motors, four wheel drive— gee Dave, is it fast? For his efforts in R/C gene splicing, the UPS guy will be dropping some new gear at David's door real soon!

- Novak Duster II Sport ESC
- Novak Rhino digital peak charger
- Novak USA T-shirt
- Novak USA hat
- Novak decal pack

Total Value: over \$275

NORRCA

Story and photos
by George M. Gonzalez



Gabe Boudreau's Losi Double-XR 'CR' (in the back) looks very similar to Brian Kinwald's. Brian has no doubt been an influence in Gabe's racing career.

THE NORRCA OFF-ROAD Nationals is one of the largest R/C racing events in the country. Twelve different racing classes are offered, which means that 12 national championship titles are up for grabs. The event includes sportsman, expert and factory classes; this ensures that competi-

tors within each class will be equally skilled. Past NORRCA Nationals have been well-attended, and this year's event was no exception. The '97 NORRCA Nationals was hosted by M n M Hobbies in Corona, CA, and was graciously sponsored by Team Associated, Team Losi, Tekin and a host of

others. Not surprisingly, the staff at M n M puts on a great show, and NORRCA director J.R. Sitman managed to stay cool and calm, despite the pressures inherent in orchestrating an event of this magnitude. As usual, the racing action was immensely exciting, and the surprises were plentiful.



Brian Kinwald was very successful at the NORRCA Nats. He TQ'ed and won all three Factory classes to claim three more national championships.



Gil Losi Jr. (right) stopped by to congratulate Brian Kinwald on his spectacular performance.



Dirtinator destroys the competition



Barry Baker took time from his racing schedule to announce a few of the Mains; he does a great job of it, too.



Below: ever seen this guy around? Well, I've seen him at a lot of races, as a matter of fact. Meet Gary Bennett of Gary Bennett Racing Motors.



He sells tweaked-out motors and all sorts of go-fast lubes that have helped many drivers win big titles. If you see him around, be sure to chat with him; he may have what you need to win.



BUSY RACING SCHEDULE

The following national championships were awarded:

- Sportsman classes: 2WD Stock, 2WD

NORRCA OFF-ROAD NATS

Mod, Stock Truck and Mod Truck.

- Expert classes: 2WD Stock, 2WD Mod, Stock Truck, Mod Truck and 4WD Mod.
- Factory classes: 2WD Mod, 4WD Mod and Mod Truck.

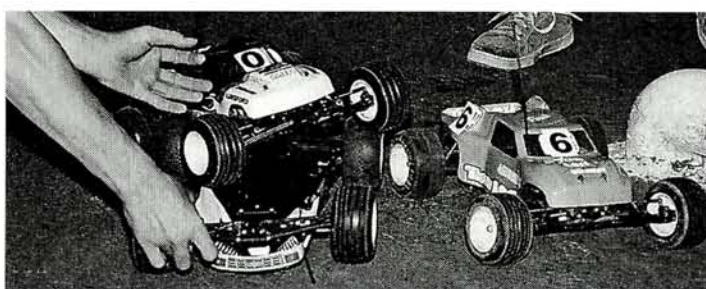
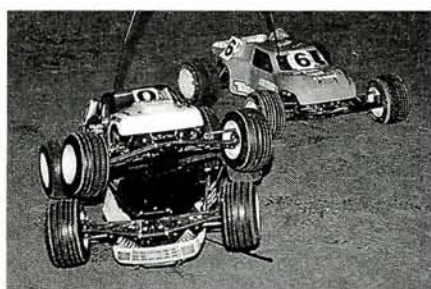
Two qualifiers were held on Saturday and two more on Sunday. After the qualifiers were run, the Sportsman drivers competed in a single, decisive main event to determine who would be crowned champ. The Expert and Factory drivers, on the other hand, didn't have it so easy; they had to face triple A-Mains to determine the victors. They were awarded points according to their finishing positions in each of the Mains; first place earned 200 points, second place earned 199 points, etc. In addition, the racer's worst finish was thrown out and only used in the event of a tie. The points were

tallied when the Mains were over, and the driver with the highest score was declared national champ.

QUALIFYING

• **Expert 2WD Stock.** A newcomer to the hobby, Gene Hickerson, managed to beat seasoned racers like Charlie Albrecht and Lloyd Dassonville to claim the coveted TQ honors. Hickerson's Losi Double-X 'CR' used Trinity motors and batteries, Albrecht's Double-X 'CR' was decked out with Maxtec motors and batteries, and Dassonville's Associated RC10B2 moved with Reedy power. Now this is what I call a motor-and-battery war!

• **Expert 2WD Mod.** Chad Phillips ended up with the TQ honors after wrestling with Lloyd Dassonville, Mike Walker, Albrecht and Nick Lasley for four rounds



This photo sequence was shot at three frames per second, which illustrates that there were some mighty quick turn marshals at the NORRCA Nats.

WE'VE PUT THE STA



When you're ready to fire up your on-road gas racer, fire up your computer first. Log onto the Team Serpent Network web site and check out our ever-expanding gas track directory, complete U.S. and world-wide racing calendars, track photos, contact numbers, maps and much more – total info for all the on-road nitro action in your area and beyond. Start your modem. Then, gentleman, start your engine.

E-mail: Serpent USA, Inc.: serp-usa@ix.netcom.com

Serpent b.v., The Netherlands: team@serpent.nl



A crowded pit area ...

destroyed his competition in this class. He left Sohrab Tavakoli, Jason Ruona and Scott Brown, his closest competitors, scrambling in his wake as his Double-X 'CR' wheeled down the straightaway.

• **Factory 4WD.** It was all Kinwald in this class, too. Brown, Alex Guerrero and Ruona all gave amazing performances but were no match for the great Kinwald.

• **Factory Truck.** Kinwald took the TQ in this class, as well, to make it a perfect score. Mark Pavidis and Gabe Boudreau gave Kinwald a serious run for his money, though.

THE MAINS

• **Expert 2WD Stock.** Top qualifier Hickerson won the first two Mains to earn 200 points and the national championship. It didn't come easy, though; Lloyd Dassonville and Albrecht were constantly nipping at his heels. Dassonville and Albrecht took home second- and third-place trophies, respectively, for their efforts.

• **Expert 2WD Mod.** TQ'er Chad Phillips earned the national championship the



... and a busy tech row.

of qualifying. Trinity, Maxtec and Reedy motors and batteries fueled this fire, as well.

• **Expert Stock Truck.** Lasley's consistent driving during the four qualifiers paid off by earning him the pole position in the triple A-Mains. Rob Schaffer, Albrecht and Joshua Anderson all put on great performances.

• **Expert Mod Truck.** Walker's brand-new, Reedy-powered Associated T3 was dialed to perfection and smoked Jason Moberly and Rick Linn for the TQ honors.

• **Expert 4WD Mod.** Alex Fernandez' lone Yokomo YZ10 smoked a field of Losi XX-4s to take the TQ. Always bet on the long shot!

• **Factory 2WD.** Brian Kinwald utterly

hard way. He started off with a first-place finish in the first Main, but his third-place finish in the second Main left the championship undecided until the third and final Main. Walker, Curtis Schlaht Jr. and Lloyd Dassonville had Phillips on the run the entire time, but Phillips managed to keep it on four wheels and cross the line in front. Walker took home the second-place trophy, while Schlaht took home third.

• **Expert Stock Truck.** TQ'er Nick Lasley started off well with a win in the first Main, but Rob Schaffer closed the door on him by placing first in the last two. Schaffer took home the national championship trophy, while Lasley and

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EXCITEMENT IN THE FAST LANE
JANUARY 1998 133



Team Associated factory driver Mark Pavidis checks out a mint RC10 with original 6-gear tranny. "It took more than 15 years to build," claimed the unknown owner. Unfortunately, Mark had only one setup tip for the guy: buy a new RC10B3.

Hickerson took home second and third, respectively.

• **Expert Mod Truck.** TQ'er Walker accomplished a one-two sweep in the Mains to earn the national championship. Chuck Berg ended up in second, and Hickerson took third.

• **Expert 4WD Mod.** The 4WD mod class turned out to be a giant hack-fest. There was so much crashing going on during the first two Mains, no one could have guessed

NORRCA OFF-ROAD NATS

the outcome. During the carnage, Greg Degani, Trevor Adamo, Bill Bridges and top qualifier Alex Fernandez fought it out tooth and nail. Things calmed down in the third Main, but the points had to be tallied to find out who had won (no runaway winners here). In the end, Degani ended up with 199 points to take the national championship. Adamo and Bridges each finished with 198 points, but after their thrown-out scores were factored in, it was Adamo who claimed second; Bridges ended in third place and TQ'er Fernandez in fourth.

• **Factory 2WD.** TQ'er Kinwald effortlessly won the first two Mains to win the national championship: end of story. Tavakoli was the only other driver even to challenge him, and this earned him the second-place trophy. Boudreau and Brown ended tied for third, but once the throw-out rounds were factored in, Boudreau ended up taking home the third-place trophy.

• **Factory 4WD.** In the first Main, TQ Kinwald ran into some trouble and finished fifth. Brown managed to fight off Boudreau and Billy Easton to take the win.

In round two, Kinwald got it together and took control of the race. Meanwhile, Guerrero and Easton had their own battle for second and as the race came to its conclusion, the little feud reached its climactic ending right at Kinwald's back door. Not in time, though; Kinwald crossed the line to take first, while Brown and Easton took second and third, respectively. Kinwald took control of the third Main, as well, taking the win and the national championship. Brown ended up with second-place



Some drivers kill time playing table soccer. M n M Hobbies has all sorts of video games and pinball machines to entertain you between heats.

W

Expert Stock Truck

Fin	Qual	Name	Chassis	Motor	Battery	ESC	Radio	Body	Tires(F/R)	Traction Additive	Pinion/Spur
1	2	Rob Schaffer	Losi	Peak	Orion	Tekin	Airtronics	Losi	Losi/Pro-Line	NA	21/88
2	1	Nick Lasley	Losi	Trinity	Trinity	Tekin	Airtronics	Losi	Losi/Pro-Line	Trinity	23/88
3	7	Gene Hickerson	Losi	Trinity	Trinity	Tekin	Airtronics	Losi	Losi/Pro-Line	Trinity	20/88
4	4	Joshua Anderson	Associated	Maxtec	Maxtec	Tekin	Airtronics	Associated	Pro-Line/Pro-Line	NA	19/87
5	8	Greg Monise	Losi	Fantom	Trinity	Tekin	Airtronics	Losi	Losi/Pro-Line	Trinity	22/88
6	3	Charlie Albrecht	Losi	Maxtec	Maxtec	Novak	Airtronics	Losi	Losi/Pro-Line	NA	20/84
7	10	Louis Fernandez	Losi	Banzai	ProMatch	Novak	Airtronics	Andy's	Losi/Pro-Line	Trinity	19/87
8	5	Dave Gullickson	Losi	Peak	Excell	Novak	Airtronics	Losi	Losi/Pro-Line	NA	20/88
9	6	Jason Corl	Associated	Reedy	Reedy	LRP	Airtronics	Protoform	Pro-Line/Pro-Line	Associated	19/87
10	9	Mike Kendall	Losi	Fantom	Orion	Tekin	Airtronics	Losi	Losi/Pro-Line	Trinity	24/88

Expert Modified Truck

1	1	Mike Walker	Associated	Reedy	Reedy	LRP	NA	Associated	Pro-Line/Pro-Line	NA	17/90
2	4	Chuck Berg	Associated	Reedy	Reedy	LRP	Airtronics	Associated	Pro-Line/Pro-Line	Associated	18/90
3	7	Gene Hickerson	Losi	Trinity	Trinity	Tekin	Airtronics	Losi	Losi/Pro-Line	Trinity	17/88
4	10	Trevor Adamo	Losi	Trinity	Trinity	Novak	Airtronics	Losi	Losi/Pro-Line	NA	NA
5	3	Rick Linn	Associated	Reedy	Reedy	LRP	Airtronics	Associated	Pro-Line/Pro-Line	Associated	15/90
6	2	Jason Moberly	Losi	Trinity	Orion	Novak	Futaba	Losi	Losi/Losi	Associated	17/88
7	8	Lloyd Dassonville	Associated	Reedy	Reedy	LRP	Airtronics	Associated	Pro-Line/Pro-Line	NA	15/87
8	9	Rob Schaffer	Losi	Peak	Orion	Tekin	Airtronics	Losi	Losi/Pro-Line	NA	18/90
9	6	Shawn Dassonville	Associated	Reedy	Reedy	LRP	Airtronics	Associated	Pro-Line/Pro-Line	NA	16/87
10	5	Derek Pocoroba	Losi	Maxtec	Maxtec	Novak	Airtronics	Losi	Losi/Pro-Line	Trinity	18/88

Factory Modified Truck

1	1	Brian Kinwald	Losi	Trinity	Trinity	Novak	Airtronics	Losi	Losi/Pro-Line	Trinity	NA
2	4	Jason Ruona	Associated	Reedy	Reedy	LRP	Airtronics	Associated	Pro-Line/Pro-Line	NA	17/90
3	7	Scott Hughes	Associated	Reedy	Reedy	LRP	Airtronics	Associated	Pro-Line/Pro-Line	Trinity	16/87
4	2	Mark Pavidis	Associated	Reedy	Reedy	LRP	Airtronics	Pro-Line	Pro-Line/Pro-Line	NA	17/90
5	10	Jimmy Jacobson	Associated	Reedy	Reedy	LRP	KO Propo	Associated	Pro-Line/Pro-Line	Associated	17/90
6	5	Mike Weed	Associated	Reedy	Reedy	LRP	Airtronics	Pro-Line	Pro-Line/Pro-Line	Associated	16/90
7	3	Gabe Boudreau	Losi	Trinity	Trinity	Novak	Airtronics	Losi	Losi/Pro-Line	Trinity	19/88
8	9	Sohrab Tavakoli	Losi	Trinity	Trinity	Novak	Airtronics	Losi	Losi/Pro-Line	Trinity	18/88
9	6	Alex Guerrero	Losi	Peak	Orion	Novak	Airtronics	Losi	Losi/Pro-Line	NA	NA
10	8	Dustin Biber	Associated	Reedy	Reedy	Tekin	Airtronics	Associated	Pro-Line/Pro-Line	NA	16/90

Expert 2WD Stock

1	1	Gene Hickerson	Losi	Trinity	Trinity	Tekin	Airtronics	Losi	Pro-Line/Pro-Line	Trinity	24/84
2	3	Lloyd Dassonville	Associated	Reedy	Reedy	LRP	Airtronics	Associated	Pro-Line/Pro-Line	NA	24/84
3	2	Charlie Albrecht	Losi	Maxtec	Maxtec	Novak	Airtronics	Losi	Losi/Pro-Line	NA	27/84
4	5	Rob Schaffer	Losi	Peak	Orion	Tekin	Airtronics	Losi	Losi/Pro-Line	NA	23/84
5	10	Andy Smolnik	Associated	Reedy	Reedy	Novak	Airtronics	Associated	Pro-Line/Pro-Line	NA	25/81
6	7	Shawn Dassonville	Associated	Reedy	Reedy	LRP	Airtronics	Associated	Pro-Line/Pro-Line	NA	24/81
7	6	Danny S.	Losi	Maxtec	Maxtec	Novak	Airtronics	Losi	Losi/Pro-Line	Trinity	26/81
8	4	Brandon Aymar	Losi	Peak	Orion	Novak	Airtronics	Losi	Losi/Pro-Line	NA	NA
9	8	Nick Lasley	Losi	Trinity	Trinity	Novak	Airtronics	Losi	Losi/Pro-Line	Trinity	23/88
10	9	Brian Handwork	Associated	GM Racing	GM Racing	GM Racing	Airtronics	Associated	Pro-Line/Pro-Line	Associated	23/83



Left to right: ■ Pro-Line's Mike Weed works on his brand-new Associated RC10T3. Mike is well-known for his custom-painted R/C bodies and does airbrush work for many of today's top drivers. ■ Team Losi factory driver Sohrab Tavakoli put on a good show at the Nats. He finished second in Factory 2WD, eighth in Factory Truck and seventh in Factory 4WD. ■ Team Trinity factory drivers Brian Kinwald (left) and Joel Johnson (right) talk shop. Each of these talented drivers has more than 20 national championship titles under his belt. ■ Team Losi factory driver Scott Brown diligently works on his Double-X 'CR.' ■ Daren Westman from Reedy Modifieds shows off his new haircut.

honors, and Guerrero settled for third.

• **Factory Truck.** Kinwald was clearly on a mission: win everything! Ruona, however, also had a mission: stop Kinwald at all costs! Ruona succeeded in the first Main but the win didn't come easy; Kinwald was all over his tailgate throughout most of the Main and even got in front of him a couple of times. The battle continued during the next two Mains but Kinwald managed to finish first in both, thereby securing his

third national championship title that weekend. Kinwald also won three national championships at the '97 ROAR Nationals, and he won the most recent IFMAR 2WD world championship; I'd say he's had a heck of a good year!

WRAPPING IT UP

The '97 NORCCA Nationals was a successful and entertaining event. The folks at M n M Hobbies have become masters at hosting

large, sanctioned racing events, and they run one of the best racing programs in the country. As always, we would like to thank the sponsors for their generous support: Team Losi, Team Associated, Tekin, Pro-Line, Robinson Racing, Fantom Motors, Ballistic Batteries and Pro Shot Racing Products. We would also like to congratulate all of the '97 NORCCA national champions on their fantastic performances. ■

E

Expert 2WD Modified

Fin	Qual	Name	Chassis	Motor	Battery	ESC	Radio	Body	Tires(F/R)	Traction Additive	Pinion/Spur
1	1	Chad Phillips	Losi	Trinity	Trinity	Novak	Airtronics	Losi	Losi/Pro-Line	Trinity	19/84
2	3	Mike Walker	Associated	Reedy	Reedy	LRP	NA	Losi	Pro-Line/Pro-Line	NA	18/81
3	7	Curtis Schlaht	Losi	Maxtec	Maxtec	Novak	Airtronics	Losi	Losi/Pro-Line	NA	NA
4	2	Lloyd Dassonville	Associated	Reedy	Reedy	LRP	Airtronics	Associated	Pro-Line/Pro-Line	NA	18/84
5	5	Charlie Albrecht	Losi	Maxtec	Maxtec	Novak	Airtronics	Losi	Losi/Pro-Line	NA	20/84
6	10	Richie Parkhurst	Losi	GM Racing	Pro-Match	Novak	JR	Losi	Losi/Pro-Line	Trinity	21/84
7	6	Gene Hickerson	Losi	Trinity	Trinity	Tekin	Airtronics	Losi	Losi/Pro-Line	Trinity	23/84
8	8	Brian Handwork	Associated	GM Racing	GM Racing	GM Racing	Airtronics	Associated	Pro-Line/Pro-Line	Associated	19/83
9	4	Nick Lasley	Losi	Trinity	Trinity	Novak	Airtronics	Losi	Losi/Pro-Line	Trinity	20/84
10	9	Brandon Aymar	Losi	Peak	Orion	Novak	Airtronics	Losi	Losi/Pro-Line	NA	NA

Factory Modified Truck

1	1	Brian Kinwald	Losi	Trinity	Trinity	Novak	Airtronics	Losi	Losi/Pro-Line	Trinity	NA
2	2	Sohrab Tavakoli	Losi	Trinity	Trinity	Novak	Airtronics	Losi	Losi/Pro-Line	Trinity	21/84
3	6	Gabe Boudreau	Losi	Trinity	Trinity	Novak	Airtronics	Losi	Losi/Pro-Line	Trinity	19/84
4	4	Scott Brown	Losi	Trinity	Trinity	Novak	JR	Losi	Losi/Losi	Trinity	23/84
5	3	Jason Ruona	Associated	Reedy	Reedy	LRP	Airtronics	Associated	Pro-Line/Pro-Line	NA	19/81
6	5	Billy Easton	Associated	Reedy	Reedy	LRP	Futaba	Associated	Pro-Line/Pro-Line	Associated	17/81
7	7	Todd Cariseo	Associated	Reedy	Reedy	Novak	Airtronics	Associated	Pro-Line/Pro-Line	Associated	18/81
8	8	Jimmy Babcock	Losi	Peak	Orion	LRP	Airtronics	Losi	Losi/Pro-Line	Trinity	20/84
9	9	Jimmy Jacobson	Associated	Reedy	Reedy	LRP	KO Propo	Associated	Pro-Line/Pro-Line	Associated	19/81
10	10	Bobby Smith	Associated	Reedy	Reedy	Tekin	Airtronics	Associated	Pro-Line/Pro-Line	Associated	18/8

Expert 4WD Modified

1	2	Greg Degani	Losi	Banzai	Orion	Novak	Futaba	Losi	Pro-Line/Pro-Line	NA	15/84
2	4	Trever Adamo	Losi	Trinity	Trinity	Novak	Airtronics	Losi	Pro-Line/Pro-Line	NA	NA
3	3	Bill Bridges	Losi	Fantom	Perfect Match	Novak	Airtronics	Losi	Losi/Losi	Fantom	19/84
4	1	Alex Fernandez	Yokomo	Reedy	Orion	Novak	Airtronics	Yokomo	Pro-Line/Pro-Line	NA	NA
5	10	Jason Moberly	Losi	Trinity	Orion	Novak	Futaba	Losi	Losi/Losi	Associated	17/84
6	7	Chris Cozzo	Losi	Trinity	Trinity	Novak	Airtronics	Losi	Losi/Pro-Line	Trinity	18/84
7	9	Dominic Favorito	Losi	NA	NA	NA	NA	NA	NA	NA	NA
8	6	Pat McCarbon	Losi	Peak	Orion	Tekin	Airtronics	Losi	Pro-Line/Pro-Line	Trinity	18/84
9	5	Dennis Smith	Losi	Trinity	Trinity	Tekin	Airtronics	Losi	Losi/Losi	NA	NA
10	8	Kevin Gowens	Losi	Maxtec	Bulldog	Tekin	Airtronics	Losi	Pro-Line/Pro-Line	NA	18/84

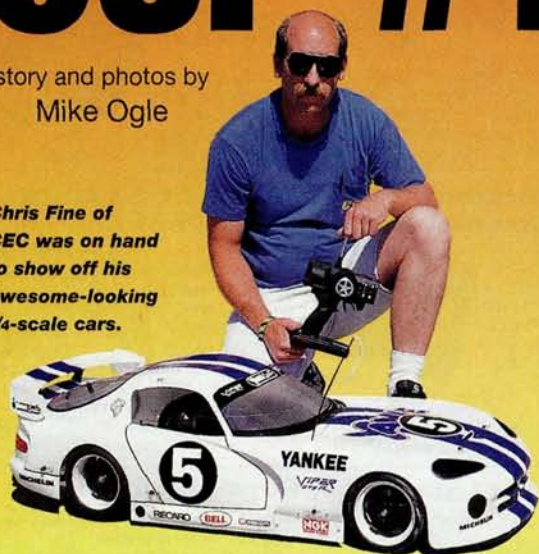
Factory 4WD

1	1	Brian Kinwald	Losi	Trinity	Trinity	Novak	Airtronics	Losi	Losi/Pro-Line	Trinity	NA
2	2	Scott Brown	Losi	Trinity	Trinity	Novak	JR	Losi	Losi/Losi	Trinity	20/84
3	3	Alex Guerrero	Losi	Peak	Orion	Novak	Airtronics	Losi	Losi/Pro-Line	NA	NA
4	4	Jason Ruona	Yokomo	Reedy	Reedy	LRP	Airtronics	Yokomo	Pro-Line/Pro-Line	NA	16/84
5	7	Gabe Boudreau	Losi	Trinity	Trinity	Novak	Airtronics	Losi	Losi/Pro-Line	Trinity	20/86
6	6	Billy Easton	Yokomo	Reedy	Reedy	LRP	Futaba	Yokomo	Pro-Line/Pro-Line	Associated	16/84
7	10	Mike Mellon	Losi	Trinity	Trinity	Novak	Airtronics	Losi	Losi/Pro-Line	Trinity	19/88
8	8	Sohrab Tavakoli	Losi	Trinity	Trinity	Novak	Airtronics	Losi	Losi/Pro-Line	Trinity	18/84
9	5	Todd Hodge	Losi	GM Racing	GM Racing	GM Racing	Airtronics	Losi	Losi/Pro-Line	NA	17/84
10	9	Mark Pavidis	Yokomo	Reedy	Reedy	LRP	Airtronics	Yokomo	Pro-Line/Pro-Line	NA	17/84

KYOSHO WORLD CUP #1

story and photos by
Mike Ogle

Chris Fine of
CEC was on hand
to show off his
awesome-looking
1/4-scale cars.



TUSTIN, CA, A BEDROOM community about an hour's drive from Los Angeles, has been home to a large Marine Corps Air Station for the past 25 years or so. But since the end of the Cold War, military cutbacks have left empty the sprawling helicopter base, its acres of concrete runways and huge blimp hangars.

The base is scheduled for conversion to civilian use by the year 2000, but what do you do with it in the meantime? Well, the Marconi Foundation (a nonprofit children's charity) and Chrysler joined forces to sponsor this year's Tustin Thunder '97—a three-day auto show and historic/vintage-car race and extravaganza! The event showcased Chrysler's unbelievable Prowler retro-rod (displayed at the event's entrance) to the car-fanatic Southern California masses, and there were more Vipers than you could easily count. The miles of runways were converted to a temporary racecourse for more than 100 vintage racecars. And what an assortment of classics there were—Morgans to Mini-Coopers, Can-Am Lolas to Shelby Cobras!

No automotive event such as this would be complete without R/C cars, though, especially since the event was held right in the backyard of so many major R/C companies, right? Of course! This

year, the Kyosho World Cup '97 Series returned to Tustin for one of the four North American events in which participants compete for a chance to race against teams from all over the world in next February's Kyosho World Cup competition in Tokyo. The West Coast regional at Tustin saw more than half a dozen teams turn out with their Kyosho Pure Ten or Nostalgic Series machines to share the spotlight with their full-size brethren. Several notable R/C manufacturers, including Futaba's Don Rice, Chris Fine of CEC with his incredible 1/4- and 1/5-scale gas and electric cars, HPI, Airtronics and of course, Kyosho, were also on hand with display booths showcasing their products.

The on-track action was regulated by J.R. Sittman and the NOR-RCA crew. The Kyosho West Coast event winner was Holli Bechard, whose PureTen McLaren put several dozen laps on the field over the course of the race, earning her and her husband Ron a pair of tickets to Tokyo to battle for the Kyosho Cup. Tustin Thunder was a great forum to expose the already car-crazy crowds to the thrills of scale-looking, gas-powered R/C competition, and it was a terrific, family-oriented event to benefit a good cause. Can't wait to see what happens next year!

Concept cars, vintage tin and the Kyosho Championship

The Tustin Thunder '97 event provided spectators with tons of exhibitions to pore over, the largest draw being tons of cool-looking cars. Here's a sampling of what was present at the show. ■ 1. Wanna hop in and rally around the country? This Alpine Renault is waiting for you. ■ 2. Now that's a touring car! This hot-looking Acura Integra sports a ton of racing mods, yet is still a daily driver. I'm ready to trade in my Yugo ... ■ 3. Cruise back to the past as you walk down the vintage-car aisle. ■ 4. How about some German machinery? These slick Porsche Speedsters were ready to rumble! ■ 5. Wait, not so fast ... maybe I'll trade in my Yugo for this smokin' "Super Pinto." ■ 6. These sweet-looking vintage McLaren Can-Am cars drew a lot of attention from passers-by. ■ 7. Head over to the "newer era" hot-rod section to check out some modern muscle.





Holli Bechard smoked the competition at the race and put them all quite a few laps down by the end. She didn't just walk away from the competition ... she flat-out ran away. Right; here's a closer look at Holli Bechard's winning PureTen McLaren.



The Kyosho World Cup '97 series kicked off in Tustin, CA, at the vacant Marine Corps Air Station base during the "Tustin Thunder" car show.



Series under the Southern California sun



4



6



5



7



PHOTOS BY WALTER SIDAS AND JOHN HOWELL

nitro 4WD TOURING CAR guide

by Peter Vieira

It's never easy to peg these things, but it looks as though nitro-powered, 1/10-scale touring cars are beginning to attain Next Big Thing status.

Why not? The electric sedan craze seems to be continuing unabated, so it's only natural that we R/C enthusiasts would want to add the scale-like power and sound of nitro engines to the already realistic sedan experience. Although 1/10-scale cars will probably shake out as the most popular class, there are other options—big and small—if you want to go gassin'.

S E V E



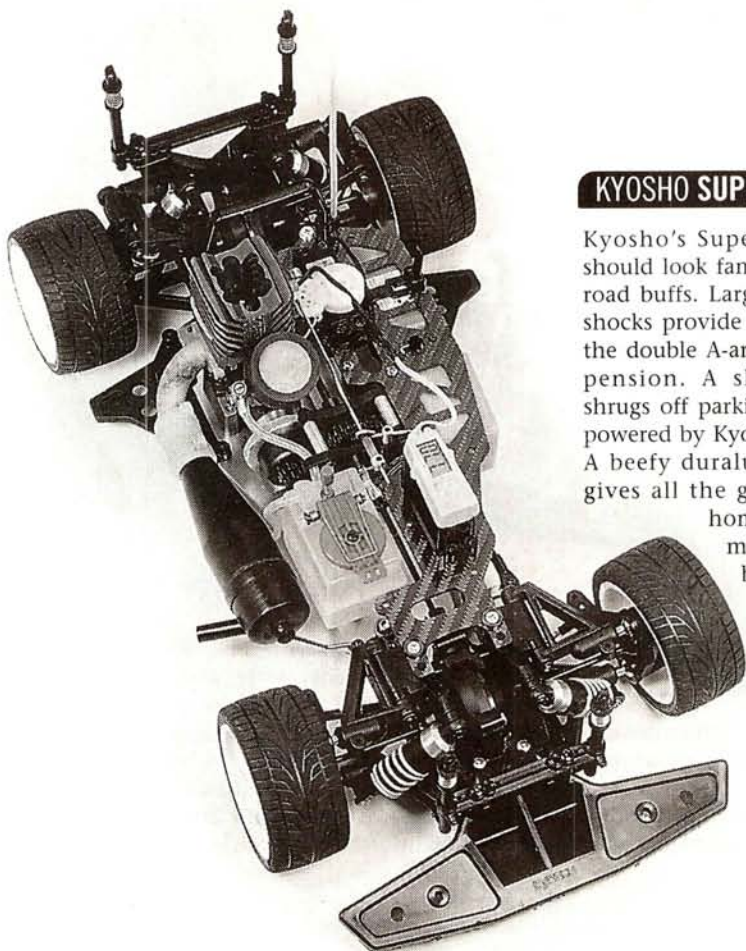
- KYOSHO PURE TEN
- HPI NITRO RS4/NITRO RS4 MINI
- FULL SPEED RACING NITRO BULLET
- MEGATECH NITRO TOURER
- TAMIYA TGX MK.1
- KYOSHO SUPER TEN



N SEDANS GO GAS!



nitro 4WD TOURING CAR guide



KYOSHO SUPER TEN

Kyosho's Super Ten technology should look familiar to 1/8 scale on-road buffs. Large-volume, oil-filled shocks provide damping action for the double A-arm independent suspension. A shaft-drive system shrugs off parking-lot debris and is powered by Kyosho's GT-15 engine. A beefy duralumin chassis plate gives all the gear a place to call home. Optional equipment includes a carbon-fiber upper deck, ball differentials, 2-speed transmission and more!

SCALE • Superten
LIST PRICE • \$499

DIMENSIONS
WHEELBASE • 11.03 in.
WIDTH (F/R) • 8.69/8.75 in.

CHASSIS
TYPE • Upper/lower plate
MATERIAL • Duralumin

DRIVE TRAIN
TYPE • Shaft-driven 4WD
PRIMARY • 15-tooth pinion (clutch bell)/ 44-tooth spur
TRANSMISSION • Dogbone/axle
DIFFERENTIAL(S) • Bevel gear (2)
BEARINGS/BUSHINGS • 8 bearings/8 bushings

SUSPENSION (F/R)
TYPE • Independent double-wishbone
DAMPING • Oil-filled, coil-over shocks

POWERPLANT
ENGINE • Kyosho GT-15
PIPE • Kyosho "Sports" muffler
CARB • Kyosho rotary barrel

FULL SPEED RACING NITRO BULLET

SCALE • 1/10
LIST PRICE • NA

DIMENSIONS
WHEELBASE • 10.04 in.
WIDTH (F/R) • 7.3 in.

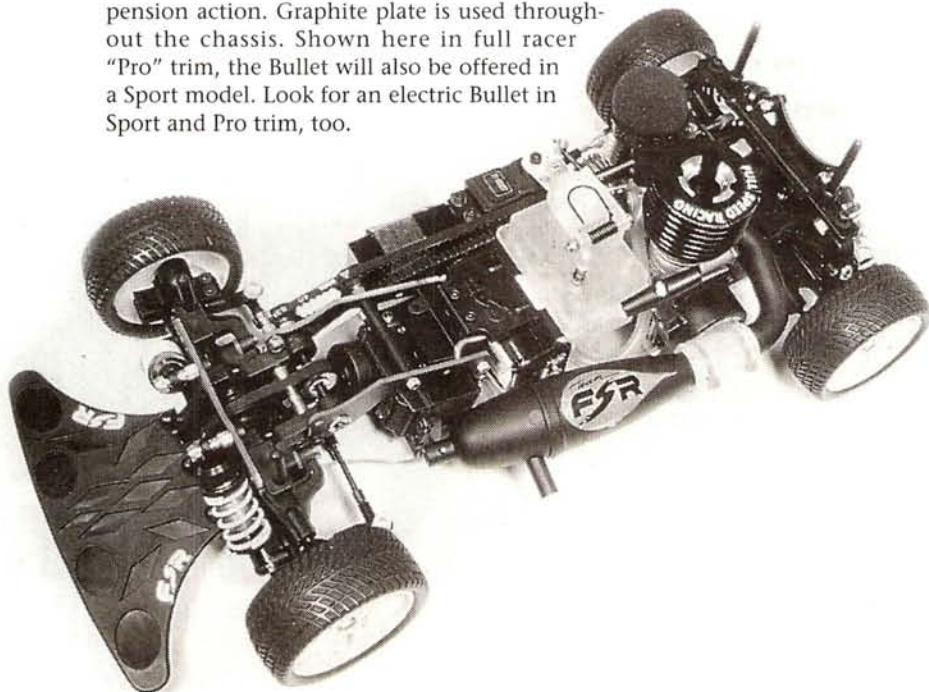
CHASSIS
TYPE • Upper/lower plate
MATERIAL • Aluminum/graphite

DRIVE TRAIN
TYPE • Triple belt 4WD
PRIMARY • Clutch bell/spur gear
TRANSMISSION • Universal drive shafts
DIFFERENTIAL(S) • Ball type
BEARINGS/BUSHINGS • Bearings

SUSPENSION (F/R)
TYPE • Ind. A-arm w/ upper link
DAMPING • Oil-filled coilover shocks

POWERPLANT
ENGINE • Not included
PIPE • Not included
CARB • Not included

This hot newcomer definitely breaks the touring-car mold with its no-bellcrank, pan-car-style steering system and unique belt layout. The Bullet borrows from 1/8-scale racecar design with pivot-ball-supported hubs and a rear body mount that isolates downforce from the rear suspension action. Graphite plate is used throughout the chassis. Shown here in full racer "Pro" trim, the Bullet will also be offered in a Sport model. Look for an electric Bullet in Sport and Pro trim, too.



nitro 4WD TOURING CAR guide

TAMIYA TGX mk.1

SCALE • 1/8
LIST PRICE • \$599

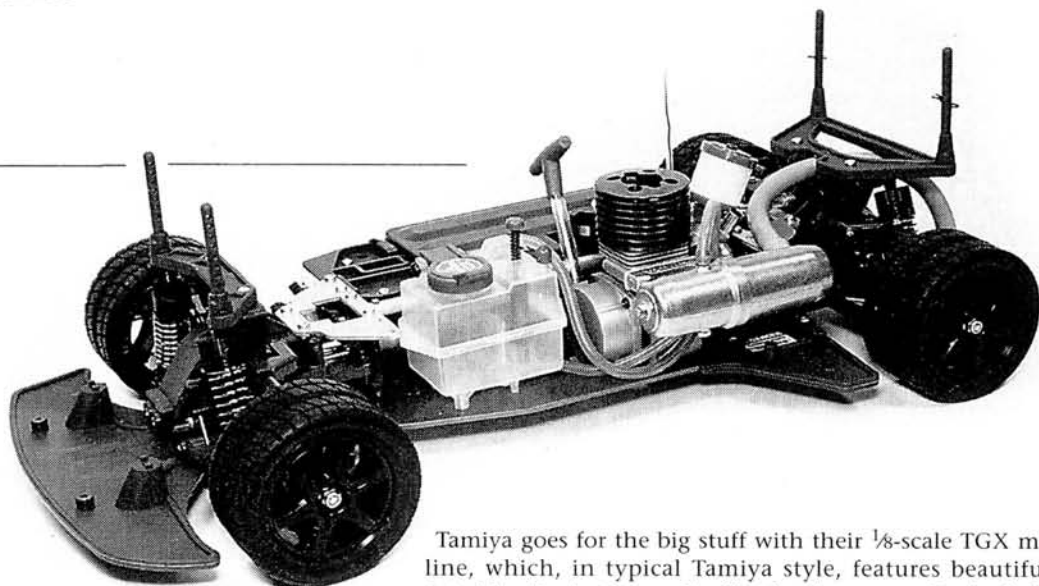
DIMENSIONS
WHEELBASE • 11.75 in.
WIDTH (F/R) • 9/8.75 in.

CHASSIS
TYPE • Plate
MATERIAL • 2.5mm duralumin

DRIVE TRAIN
TYPE • Shaft driven 4WD
PRIMARY • Clutch bell/spur gear
TRANSMISSION • Outdrives/dogbones
DIFFERENTIAL(S) • Gear
BEARINGS/BUSHINGS • Bearings/bushings

SUSPENSION (F/R)
TYPE • Upper/lower A-arms
DAMPING • Oil-filled, coil-over shocks

POWERPLANT
ENGINE, PIPE, CARB • OPS .15 w/ stock muffler and carb



Tamiya goes for the big stuff with their 1/8-scale TGX mk.1 line, which, in typical Tamiya style, features beautifully sculpted bodies in true scale. The hardware goodies include a shaft-driven power train, a .15 OPS engine, oil-damped shocks and a roomy, sealed radio compartment. An aluminum chassis keeps it all together, and the legendary Tamiya quality is certainly in evidence. You can personalize your TGX with Tamiya options such as ball differentials, swaybars, a lightweight-carbon center shaft, 2-speed tranny, tuned pipe, heat-sink head and reinforced Super Slicks.

KYOSHO PURE TEN

SCALE • Superten
LIST PRICE • \$299.99 w/o options

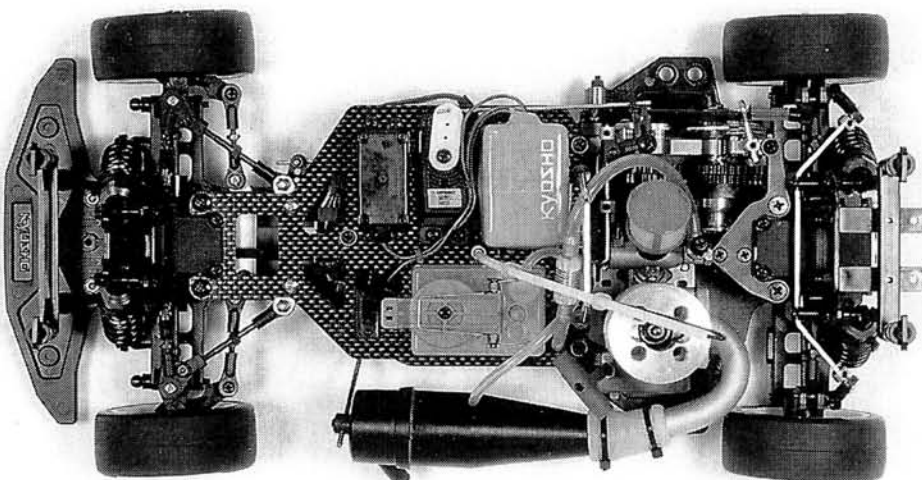
DIMENSIONS
WHEELBASE • 10.4 in.
WIDTH (F/R) • 8.12 in.

CHASSIS
TYPE • Stamped lower plate/upper radio tray
MATERIAL • Aluminum

DRIVE TRAIN
TYPE • Triple-belt 4WD
TRANSMISSION • Outdrives/dogbones
DIFFERENTIAL(S) • Bevel gear
BEARINGS/BUSHINGS • Bushings

SUSPENSION (F/R)
TYPE • Ind. A-arm w/upper link
DAMPING • Coil-spring friction shocks

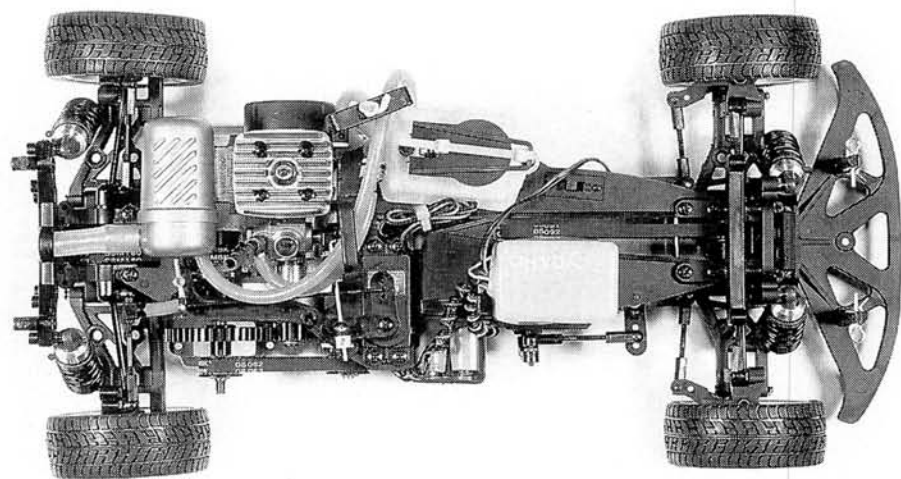
POWERPLANT
ENGINE • Kyosho GS11X
PIPE • Kyosho muffler
CARB • Barrel type



Kyosho offers this nitro sedan chassis in a few body styles, from Nostalgic Series cars such as the Corvette Stingray and Ferrari 250 GTO to modern touring cars like the Opel Calibra and Calsonic Skyline. The Pure Ten features an aluminum double-deck chassis with a three-belt drive system. Friction-damped shocks and Kyosho's own pull-start-equipped GS11X motor are included as well. As indicated by the fully optioned tester shown here, plenty of hop-ups are available: graphite chassis, aluminum oil-damped shocks, tuned pipe and ball bearings are just a few (check out our review of the Pure Ten with all the options in the September '97 issue).

HPI NITRO RS4 & NITRO RS4 MINI

Given the popularity of the electric RS4, a nitro version was a natural. A three-belt drive system with disk brake makes for an efficient drive train, and HPI's own Nitro Star12 powerplant provides ample go power. Plastic-body oil-damped shocks are standard, as is an aluminum chassis. The Nitro RS4 shares many parts with its electric stable mate and accepts HPI's popular sedan bodies, including those of other manufacturers. HPI is no slouch in the option department either; the hopped-up special shown here is the "G-man's" personal ride and features a carbon-fiber upper chassis, 2-speed transmission, aluminum shaft support, tuned pipe, aluminum shocks and other mods. If mini-racers turn you on, the Civic-bodied Nitro RS4 Mini should really get your adrenaline pumpin'. It shares many parts with its big brother and uses the same pull-start-equipped Nitro Star thumper.



SCALE • 1/10
LIST PRICE • \$329 & \$299

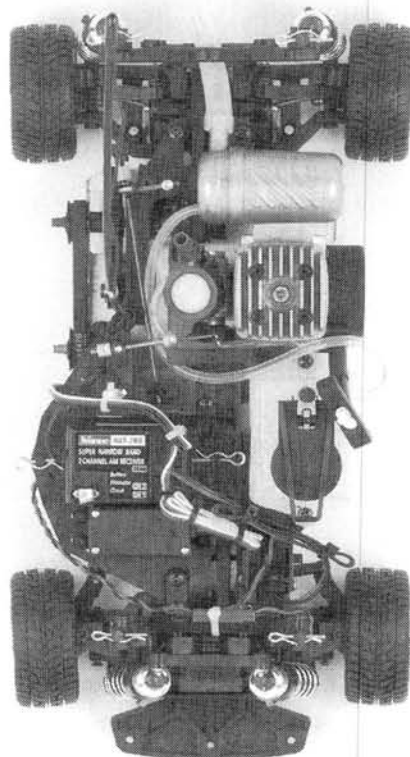
DIMENSIONS
WHEELBASE • 10 in. & 8.812 in.
WIDTH (F/R) • 7.75 in. & 6.18 in.

CHASSIS
TYPE • Flat plate w/upper deck
MATERIAL • Aluminum lower; molded plastic upper

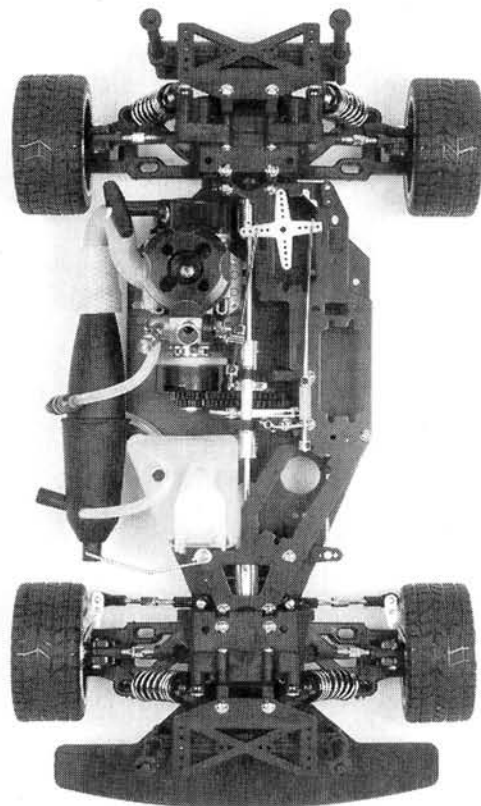
DRIVE TRAIN
TYPE • Belt-driven 4WD
PRIMARY • Clutch bell/spur gear
TRANSMISSION • Dogbones/axles
DIFFERENTIAL(S) • Bevel gear diffs
BEARINGS/BUSHINGS • Metal bushings

SUSPENSION (F/R)
TYPE • Lower arm w/ adjustable upper link; lower arm w/ molded and fixed upper links
DAMPING • Plastic body, oil-filled shocks

POWERPLANT
ENGINE • HPI .12 & .12 Nitro Star both w/pull-start and muffler
PIPE • HPI muffler
CARB • Barrel type



MEGATECH NITRO TOURER



If your dream car is overpowered, blazing fast and rugged as heck (if not totally scale), then this is your machine. Think of a 1/10, street-tire-shod version of an 1/8-scale buggy, and that pretty much sums up this machine. Shaft-driven front and rear differentials get the spin from Megatech's own M-16 mill and a 2-speed tranny. Long-travel aluminum shocks and a double-deck aluminum chassis should allow the Mega-mobile to handle the worst your parking lot has to offer!

SCALE • 1/10
LIST PRICE • \$249.95

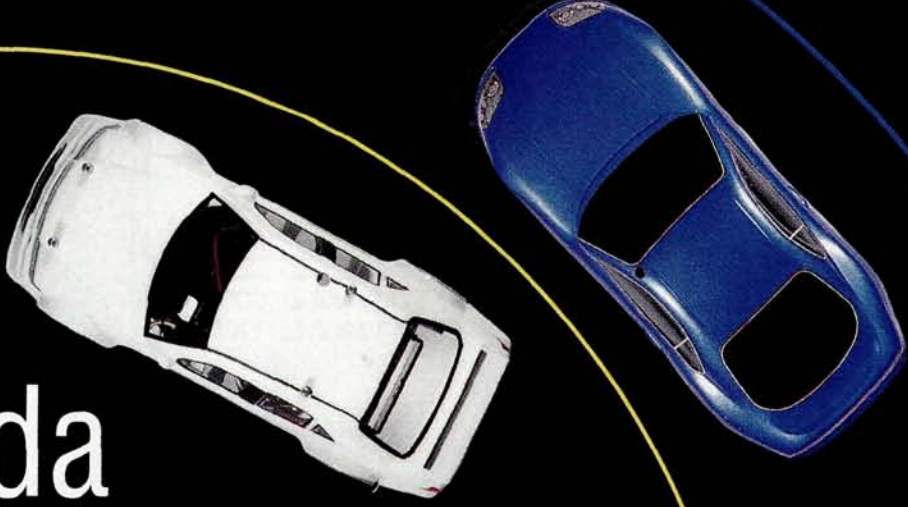
DIMENSIONS
WHEELBASE • 10.5 in.
WIDTH (F/R) • 9.25 in.

CHASSIS
TYPE • Upper/lower plate
MATERIAL • Aluminum

DRIVE TRAIN
TYPE • Shaft-drive 4WD
PRIMARY • 2-speed clutch bell, 2-speed spurs
TRANSMISSION • Universals front drive shafts/rear dogbones
DIFFERENTIAL(S) • Bevel gear
BEARINGS/BUSHINGS • Ball-bearing drive train, bushings in hubs

SUSPENSION (F/R)
TYPE • Independent double wishbone
DAMPING • Oil-filled coil-over shocks

POWERPLANT
ENGINE • Megatech M16
PIPE • Megatech plastic tuned pipe
CARB • Barrel type



Kawada **M-24 TRIPMATE** & ABC Hobby **DTM** micro mini mayhem

by Peter Vieira

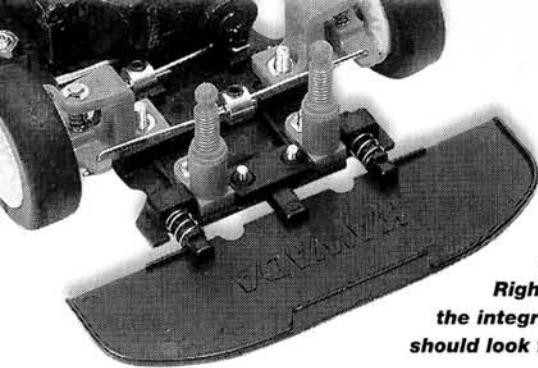
THERE'S NOTHING I enjoy more than taking a break to run off a pack or two in my favorite R/C car, but a 1/10-scale car and its support gear isn't the kind of thing I carry around "just in case." Lugging a lot of R/C gear isn't exactly easy, and for air travel it's a real liability. There is a way, however, to enjoy some R/C action between seminars at that sales convention in Cincinnati or during a coffee break on the job; all you need is a 1/24-scale racer from ABC Hobby* or Kawada*!

These mini-racers take a lot of the "bulk" out of 1/10-scale R/C, but still have the features that make it fun. Kawada and ABC cars feature simple coil-spring front suspensions with T-plate/rear pod setups. Mabuchi FK-130 SZ are used to power both of the pocket racers.

Despite these similarities, however, there are striking differences in their design philosophies; let's move in for a closer look at each.

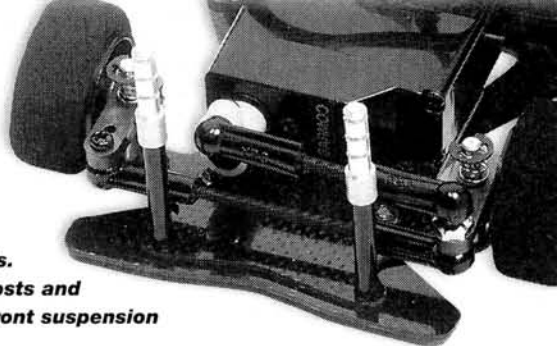


PHOTOS BY WALTER SIDAS



Left: gee, do ya think it's big enough? If you can hit it, the Kawada's spring-loaded bumper should be able to shrug it off! Note the independent, adjustable-offset front suspension mounts.

Right: check out the turned-aluminum body posts and the integral front bumper. The coil spring/kingpin front suspension should look familiar to any pan-car owner.



KAWADA M-24 TRIP MATE

The folks at Kawada have taken the high road in creating their M-24. All the pieces are injection molded, and the tiny machine packs a ton of features. Perhaps most notable are the adjustable track and wheelbase. The car's chassis comprises front and rear sections that are joined by

tape to the underside of the body. When completed, the body shell is held securely without ugly body clips. Also included is a generously sized, spring-loaded front bumper to absorb forward impacts, a smooth gear differential and a fully enclosed battery box that makes changing the 110mAh mini-battery a snap.

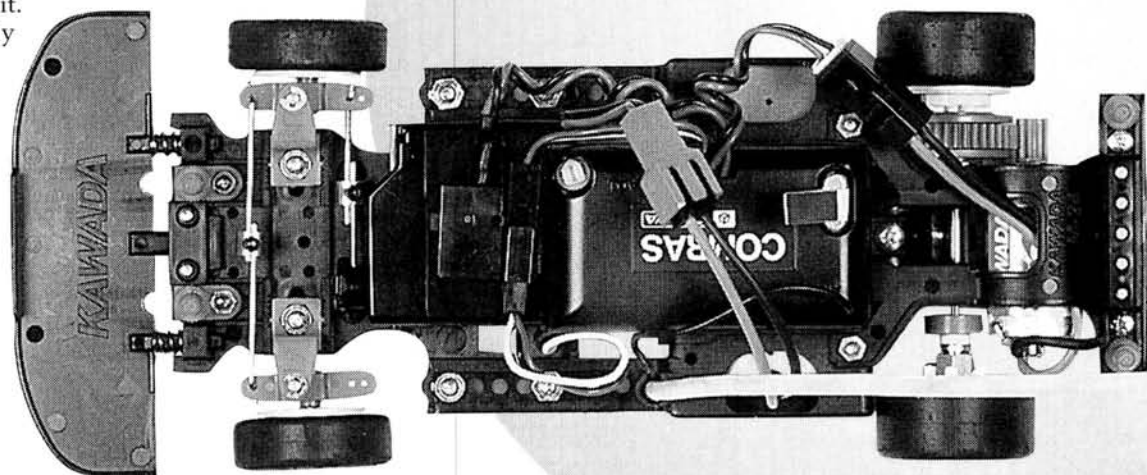
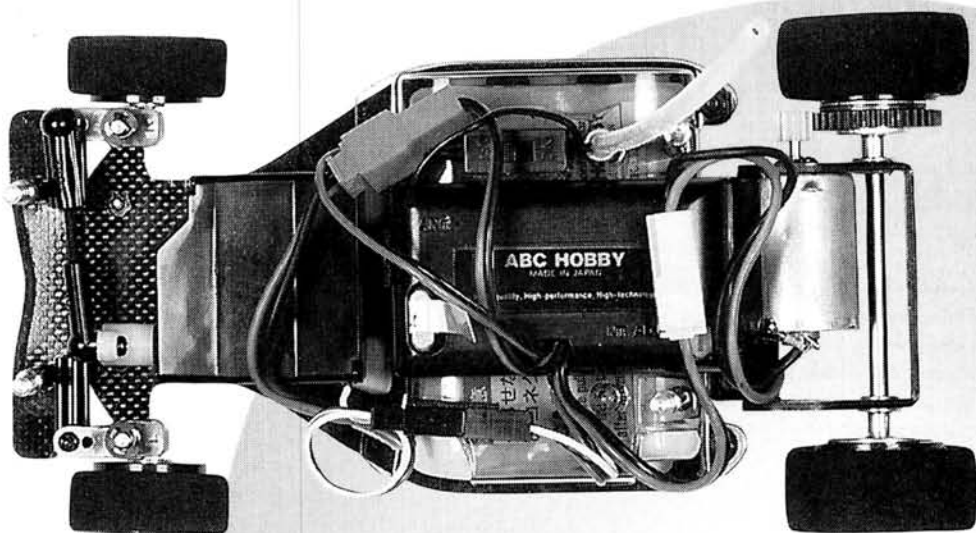
ABC HOBBY POCKET RACER

ABC took a different approach with their Pocket Racer and built what is essentially a 1/24-scale pan car. Any pan driver should be familiar with the Pocket Racer's fiberglass chassis and front kingpin support. Like Kawada, ABC uses coil-springs to support the front hubs and a T-plate for the rear suspension. But ABC has mounted the motor ahead of the rear axle and uses a ball differential instead of Kawada's gear diff. ABC's rear wheel mounting setup is clever; the hubs are large-diameter, alloy

mini cars

a pair of molded rails. These rails allow the chassis to extend like a trombone in 4mm increments; when you have the setting you need, four screws hold the two pieces together. To adjust the track (width) of the car, Kawada designed the front suspension so that each wheel has an individual support. The supports have small teeth molded into them that engage one of six detents molded into the chassis. By selecting positions that are more inboard or outboard, the front wheels are moved farther apart or closer together. In the rear, spacers are keyed to the hubs, and width is altered by adding or removing these spacers. Although a nicely molded Lexan body is included with the kit, the M-24's adjustability should allow it to accept the body from virtually any 1/24-scale styrene static-model kit.

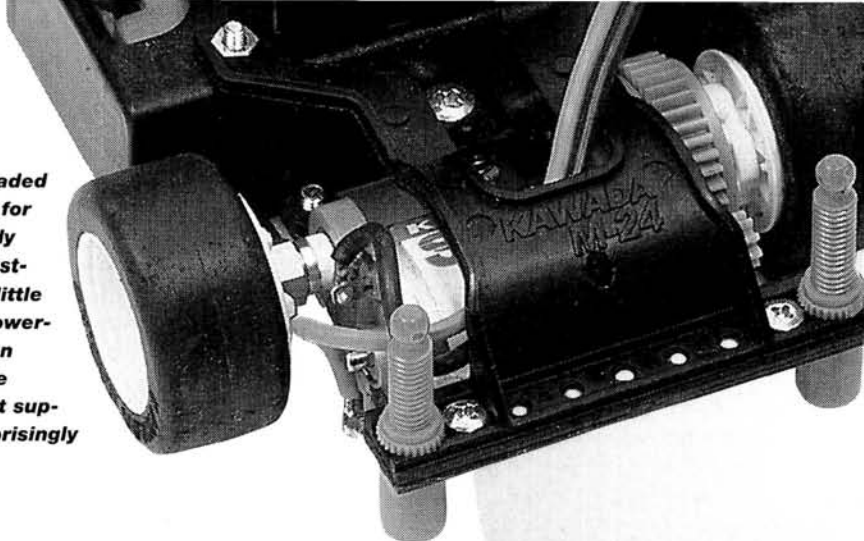
Kawada created equally adaptable body mounts to match the chassis' adjustability. The mounts are threaded into supports on the chassis that allow them to be threaded in to lower the body or backed out to raise it. Each mount is tipped by a ball fitting that pops into plates secured by servo



Top right: ABC DTM Minicar.
Bottom right: Kawada M-24.

drums that are grooved to accept an O-ring. The black plastic rear wheels are pressed over the hubs, and the friction created by squeezing the O-ring between the rim and hub holds them together. It works! A heavy-gauge Lexan tray is mounted over the chassis to simultaneously house the mini-battery and provide a shelf for the receiver/ESC unit. Although not as adjustable as the M-24, the Pocket Racer does afford some flexibility in its dimensions by offering three mounting options for the front axle plate and two positions for the rear pod. Width isn't adjustable. Nicely turned aluminum body posts and foam tires round out the Pocket Racer package. Although no body

The M-24 features clever threaded body posts for precise body height adjustment. The little Mabuchi power-plant hidden beneath the body-mount support is surprisingly zippy!



is included, ABC sent along an AMG Mercedes body for this review.

TEST GEAR

These cars are too small to accept gear from a 1/10-scale car, so specialized mini-systems are used. Our test cars came

we were ready for some micro-oval action. Frank opted to drive the ABC car, while I drove the Kawada. I actually built two of these, one of which was hopped up with Kawada's bearing set—they're tiny!—and foam tires. John had the honors of taking the wheel on the souped-up M-24. We agreed that the start tone for our race would be the next ring of Frank's phone; within 20 seconds, we were off. Frank took the holeshot, with John and I tucked in close behind.

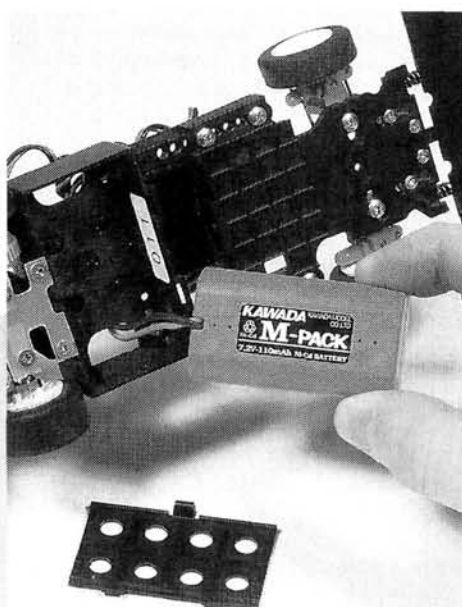
These little cars are no slouches in the acceleration department; they can scoot! Cornering was a little tricky, as all three cars were mighty squirrely. Dialing out-steering—a lot of steering—was the hot setup. Frank and John soon found a groove and were battling for first, while I

floundered around with full steering, since my radio didn't have dual rate. I was in "jam car" mode! These machines are rugged, too; there were plenty of wall taps and demo-derby crashes in the hallways of R/C Car Action.

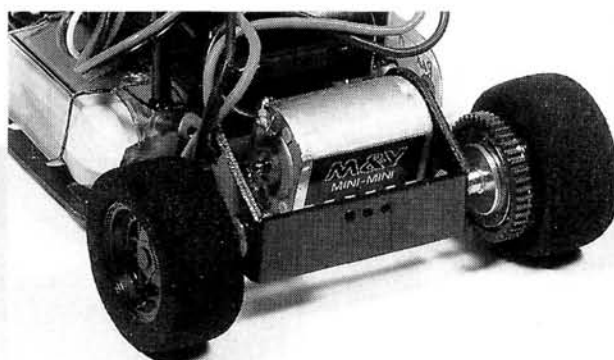
FINAL THOUGHTS

I'm not ready to give up my 1/10-scale fleet, but these little cars are plenty of fun—and you can run them virtually any time, anywhere. They require no maintenance beyond blowing the carpet dust off after a run, and long run times mean you don't need an armload of batteries to enjoy a lunch-break's worth of R/C excitement. I like the Kawada best for its adjustable chassis dimensions, but the ABC car looks the coolest out of the box with its fat, foamie tires. Either one is a fine choice for on-the-go R/C!

**Addresses are listed alphabetically in the index of manufacturers on page 248.*



Above: the Kawada M-24 stows its little 110mAh battery in a molded compartment; a snap-in lid keeps it secure. The tiny pack is good for about 10 minutes. Below: the ABC car uses a larger 270mAh battery pack, held in a no-moving-parts Lexan tray. The larger battery offers about 15 minutes of run time.

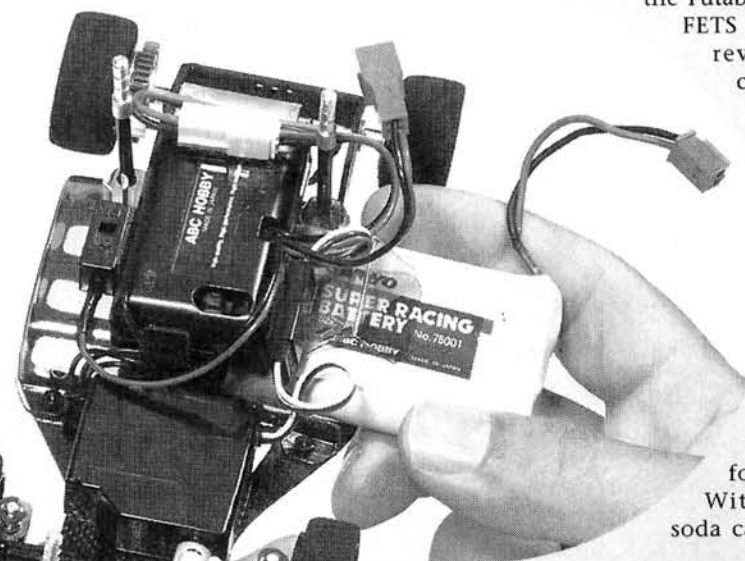


Here's the business end of the ABC DTM; a stamped rear pod relies on the flex of a tiny fiberglass T-plate for suspension. Both the ABC and Kawada machines use a Mabuchi FK-130SZ motor for go-power.

equipped with similar systems from Sanwa and Futaba*. Both feature a combined receiver/ESC unit with proportional forward and brake and a plug-in micro-servo to handle the steering chores. The two units are virtually identical, except the Futaba unit features exposed FETS and is equipped with reverse. To control the cars, standard AM radios on the 27MHz band are used (not supplied). Airtronics* and Futaba transmitters worked equally well with either system.

PERFORMANCE

The hallway outside R/C Car Action's plush editorial offices was a ready-made track for the 1/24-scale racers. With a couple of empty soda cans as corner markers,



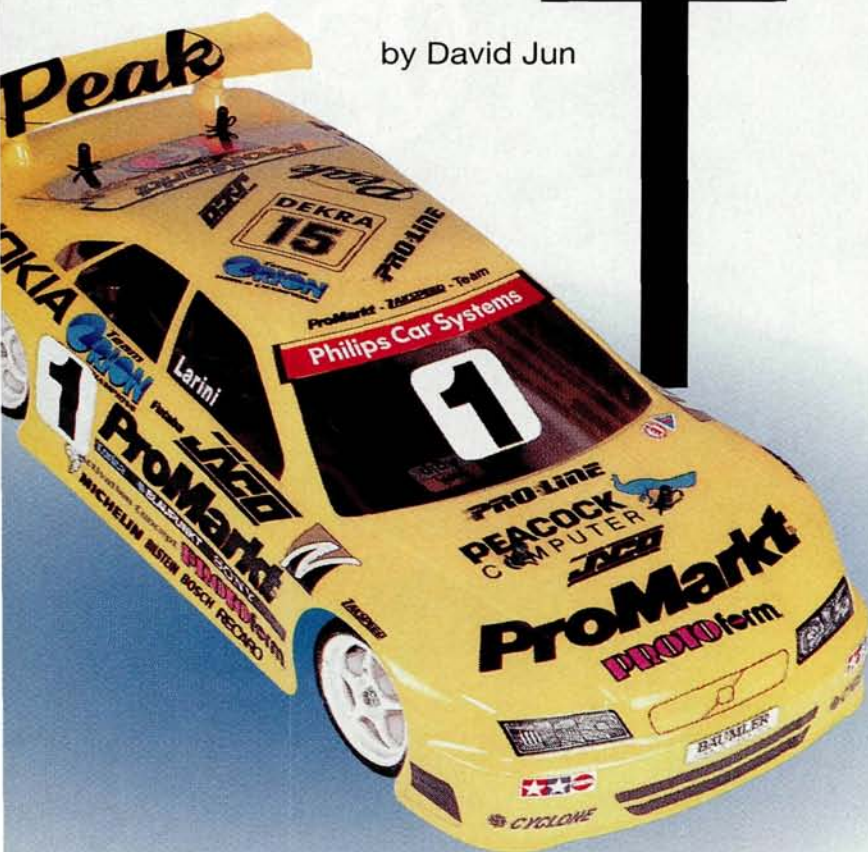
TAMIYA'S* third-generation 4WD racing chassis is the TA03F-Pro, and I've had a great deal of success with it. At the 1997 ROAR On-Road Nationals in Florida, I

went with a setup that was somewhat different from the one I usually run back home in California. In this article, I share details of what worked for me in Florida. But right away, here's my most important tip: *be sure that everything is in good condition, and*

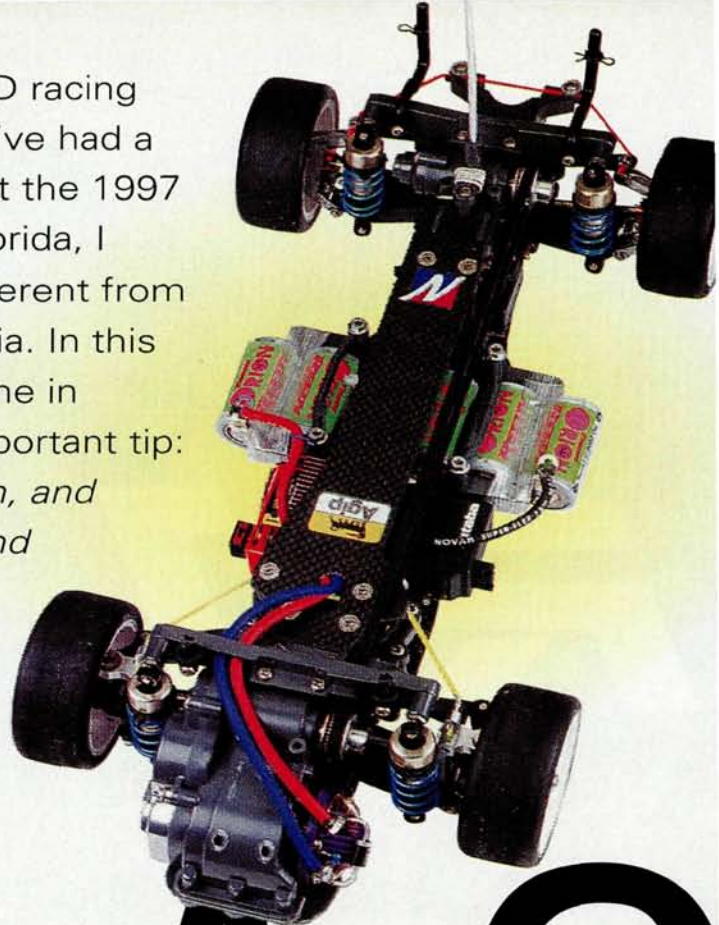
replace worn and damaged parts.

BUILD A NATS WINNING

by David Jun



DAVID JUN'S SECRETS OF SUCCESS



TAO

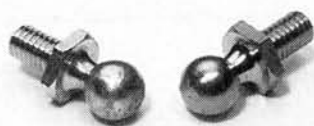
DIFFERENTIALS

The diffs are one of the most important adjustments on the car, so pay close attention when you build or rebuild them. Assemble the diffs according to the instructions but with these hop-ups:

- Aluminum pressure-plate set—part no. 53219.
- 3mm tungsten-carbide diff-ball set—53124.
- Hard joint-cup set—53217.



GEARBOXES



Aluminum ball connectors ...



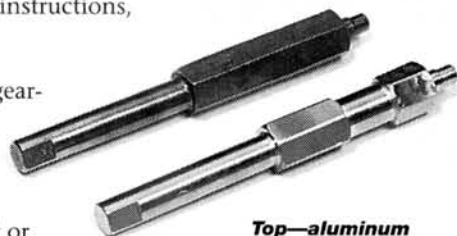
... and titanium screws help reduce the mass of the TA03.



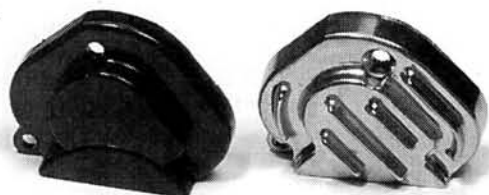
Every bit counts; carbon gear shafts replace the steel stockers

Assemble the front and rear gearboxes as shown in the kit instructions, but with the following hop-ups:

- **5mm aluminum ball connectors**—part no. 53284.
- **Aluminum counter shaft**—53274. Installed in the rear gearbox, this saves weight.
- **Torque-splitter unit**—53279. This goes in the front gearbox. It allows the car to carry more speed in the turns. The reason? When your car is in the apex of a turn, the wheels are usually turned almost all the way to the left or right, and the car is decelerating. Without the torque splitter, the front and rear wheels fight one another. The rears try to turn faster than the front, and that causes drag. The torque splitter allows the front wheels to freewheel so the car can carry more speed going into and coming out of corners.
- **TA03 aluminum motor heat sink**—53275. This cools the motor and adds support to the front gearbox.
- **Hollow carbon gear shaft**—53260. This saves that extra bit of weight.
- **Titanium screws**—53017 (3x15mm), 53095 (3x10mm).
- **Tamiya Ceramic Grease**—87025. To damp gear lash and make the gearboxes more efficient, apply a thin coat of this to the surface of the gears.



Top—aluminum counter shafts take a big bite out of the TA03's rotating weight; center—the torque-splitter unit helps the car carry more speed through turns; bottom—looks great, adds strength and cools the motor; Tamiya's heat sink is a must have.



3

SAVING WEIGHT

To save a little weight, I cut away portions of the gearboxes and chassis parts. But remember that if you plan to race in the Tamiya Championship Series, these modifications are not allowed.

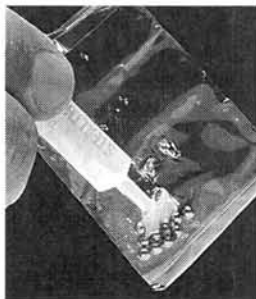
- **Front gearbox.** Cut off the unused parts of the mounting posts above the motor. From

the lower half of the gearbox, remove the outside mounting posts, then trim the front bumper enough to make it just profile the gearbox.

- **Rear gearbox.** Cut away the left and right tabs in front and hollowed out the compartment so the receiver will fit in the center of the car. Also, Dremel the rear swaybar mount area.
- **Battery brace.** Cut out the X portion.

Do not use anything, e.g., damper grease or syrup, between the diff ring and the pressure plates. Believe it or not, I've seen people do this. Whatever you use, it squeezes out into the diff balls and makes a mess in the diff.

- **Diff rings.** When you install the diff rings, look at them carefully, and put the round side facing downward so that the sharp-edge side faces the diff balls. The sharp-edge side is a little flatter and will make the differential work a bit more consistently. I use Associated's* diff lube because it stays on.
- **Thrust bearing.** I



Squeeze a little lube into a baggy with the diff balls. This will give you just the right amount of lube.

replaced the thrust bearing with a single Tamiya 5x11 sealed bearing and two large cone washers. Put the remaining parts in your storage box. Install the 5x11 ball bearing, then the two cone washers ("clamshelled" together) and, finally, the 4mm bolt.

When I tighten the diff, I hold it on its side so that gravity will not pull the cone washers or the bearing to one side or the other. You should be able to tighten the bolt all the way down. The diff should feel

smooth but not loose. When you tighten the bolt, tighten a quarter turn at a time, and check the diff between each quarter turn. A high-quality ball bearing for the diffs is a must, and if they feel gritty, even with a new bearing, try a Tamiya sealed ball bearing; I always use them because they really are of the highest quality.

- **Joint cups.** Now, you probably have the joint cups installed. To prevent the joint-cup teeth from stripping out under constant acceleration and braking, I always put a little Tamiya blue thread-lock on them.

Put the 5x11 bearing on the joint cups before you apply the thread-lock.



SUSPENSION

Assemble the suspension according to the instructions but with these hop-ups:

- **TA03 stabilizer set**—53276. The set includes three bars of three ratings: red (soft), yellow (medium) and blue (hard). I installed the yellow bar in the front and the red bar in the back. This proved to be a perfect balance with the torque splitter and was great for the traction in Florida. Without the swaybars, the car was on the verge of traction rolling.

- **TA03 aluminum rear uprights**—53288. These don't change the suspension geometry, but they do offer additional support to the rear axle assembly.

- **Tamiya's super low-friction dampers**—53280. These are the highest quality shocks available. The set comes with all four shocks and blue tuned springs.

Assemble all four with the Teflon two-hole pistons. For the internal limiters, install one black O-ring as per instructions, and add one short plastic limiter from the stock plastic shock set to each shock. Use Associated 30W shock oil in all four, and use the blue springs supplied with the shock set. When you have everything installed, the car's ride height should be 5mm and it should be level to the ground.

- **Aluminum kingpins**—53157. They're lighter than the stock parts, and smoother as well.

- **Universal shaft set**—53172.

- **Cross* 2-degree aluminum caster blocks.** These reduce caster from 8 degrees to 5 degrees of total caster. This is because there is 3 degrees of anti-dive in the suspension arms. In Florida, I needed a little more steering, and the Cross caster blocks allowed the car to enter the corners faster and allowed me to use a front swaybar.

- **Tech Racing* offset axles.** These replace the standard rear axles to make the rear track about 5mm wider than the front. This allows the car to rotate and finish the turns better. If you use the Tech Racing rear axles, you won't be able to use universals, but because the rear wheels don't steer, going without universals won't hurt performance. But universals are important in the front suspension and should be used.

- **Kose* suspension shims.** When you assemble the suspension, to ensure there isn't too much play, use one red shim on each hinge-pin point—a total of eight shims.

Be sure there is no binding in the suspension.

The stock upper arms work very well and should not be changed.



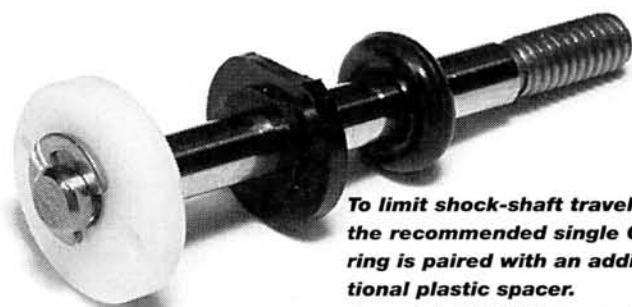
The aluminum rear uprights are stiffer than the stock pieces, and they look cool to boot!



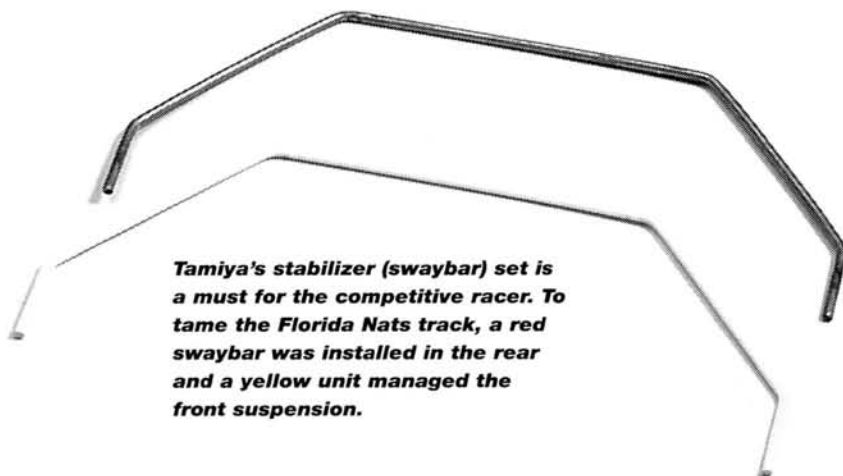
A set of universal shafts helps to smooth out the TA03's power delivery and reduce drive-train friction.



The stock steel kingpins have a surprising amount of heft; the aluminum replacements help lighten things up.



To limit shock-shaft travel, the recommended single O-ring is paired with an additional plastic spacer. Associated 30WT shock oil provides the damping.



Tamiya's stabilizer (swaybar) set is a must for the competitive racer. To tame the Florida Nats track, a red swaybar was installed in the rear and a yellow unit managed the front suspension.

BELT AND PULLEYS

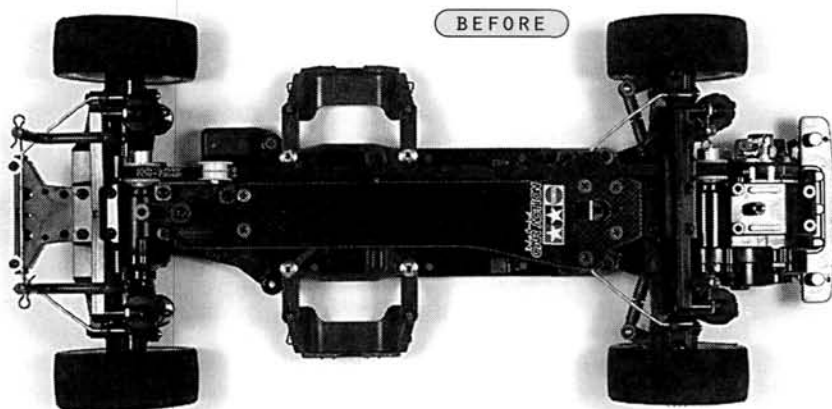
You need:

- **Aramid fiber belt**—53278. This is much smoother, lighter and more efficient.
- **TA03 aluminum pulleys**—53286. These are the same weight as the stock pulleys and tend to repel dirt and rubber. The TA03F-Pro came with a belt tensioner that I didn't use. If your belt starts to skip, install the tensioner.



The TA03 proved to be an excellent platform for mods.

Doesn't look much different from the "After" shot below, does it? Dave's setup tips reflect the subtle differences that take a car from capable stock trim to Nats-winning high performance.



I use a Futaba* 3PJ transmitter with a R103F receiver. To turn the car, I use a Futaba 9402 high-speed servo, and to power it, I use Novak's* Cyclone programmable speed control.

- **Radio installation.** Start with the receiver, which goes into the hollow compartment in the rear gearbox. I mount the servo and speed control in a special way so that everything sits on the lower deck. This is very easy to do; just move the servo to the left, and servo-tape the speed control next to it. I use Shoe Goo to hold the servo in place.

RADIO EQUIPMENT

The only thing you need to change is the linkage between the bellcranks: reverse it. First set up the servo—including the rods and linkage—according to instructions. Then remove the servo, and reverse the linkage between the bellcranks. Set up the Tamiya high-torque servo-saver (50473) so that it's neutral or "centered." Because you have the steering rod adjusted, simply move the servo to the left till the tires are pointing straight ahead, and Shoe Goo the servo into

place. When you do this, make sure the battery box is in the forward position. Once the Shoe Goo is dry (this will take about a day), you can servo-tape the speed control.

The Novak Cyclone uses an external capacitor, so I cut all but 3mm off the positive and negative leads. Then I use the wire that's used for the brake lights to connect the capacitor to the speed control. Doing this allows me the freedom to put the capacitor wherever I want. It's very important to make the wire as short as possible.

FINAL THOUGHTS

I didn't mention the tires. I used Pro-Line* tires in Florida, and they worked great. I also replaced all of the 5mm ball ends with the aluminum ball end set (53284). Remember, this setup is what worked for me in Florida. You may need a different setup for your home track. The TA03, however, proved to be an excel-

lent platform for mods. Its groundbreaking design and my well-thought-out modifications gave me the winning combination.

Good racing and have fun!



*Addresses are listed alphabetically in the Index of Manufacturers on page 248. ■

Polish Suspension and Transmission Parts

Reduce Friction and Go Faster

by Rick Eyrich

FRICTION AND DRAG on the drive train and suspension of an R/C vehicle will hinder its performance; as a result, it may handle poorly. If an A-arm, shock shaft/pivot, dogbone axle, ball joint or linkage can't move through its complete range of motion, it will bind. Think of it this way: if a few grams of excess suspension friction can mess up the setup of a 2,500-pound racecar, what are the odds that you'll have similar problems on a 40-ounce R/C car? So, which would you rather do: spend an evening or two buffing a few rough parts, or spend your race days playing "tail-end Charlie" to the rest of the field? The choice is yours. To avoid this glitch, here are several simple polishing techniques you can apply to your chassis' suspension and driveline pieces to enhance handling and speed.

BEFORE YOU POLISH ...

Clean everything! Use motor spray or soap and water, but read labels carefully before you try all-purpose spray cleaners; some of these can damage metal. And don't think you can polish everything. Although a lot of R/C car parts can be polished because they are made of alloy aluminum steel, an increasing number are made of titanium and magnesium, and many are coated with nitrates or have been anodized. If you try to polish some coated parts like dogbone axles and shock shafts, they will lose their finish or plating and become useless! So inspect the parts before you work on them, or you may accidentally remove their protective coatings. Many times a simple wax/chamois cloth cleaning is all that's needed.

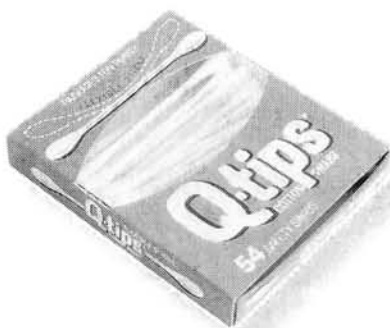
Equip yourself with the usual Dremel* Moto-tool and polishing wheels, paste polish, a Scotch-Brite pad, some regular cotton swabs, a sheet of crocus cloth (an ultra-fine-grit emery paper) and a chamois rag like those used to wipe down the family car. To avoid damaging a small pin or shaft while you burnish it, slip silicone fuel tubing over one of its ends while you work on the other. *Never* use pliers or clamps for this work, or you'll mar the metal!

When you polish, eye protection is a must, but I recommend that you wear gloves, as well, to protect your digits from stains and injury.

To clean out certain spaces, nothing beats a Q-tip! Cut one in half, put it in your Dremel and set the tool running at a low speed.



Certain cleaners can damage some metals. Check the cleaner's label to see if it can be used on metal surfaces.



THINGS TO BUFF

Axles, shocks, A-arm pins, kingpins, diff rings, bevel gears and ball joints need different amounts of shine-up work. Because shocks, pins and joints are exposed to a lot of dirt, grit and other nasty stuff, and they get roughed-up in crashes, a good cleaning and buffing can do wonders for them.

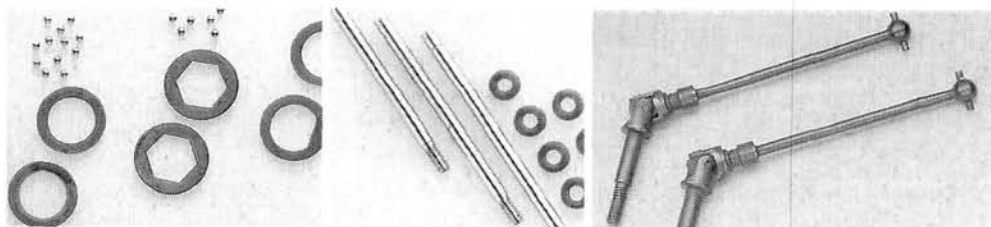
Smooth minor scuffs and rough spots with a few minutes' work with crocus cloth; then, to protect the finish, apply a coat of regular polish. Heavier crud, like crusted dirt or wear marks on dogbones and shock caps, may have to be cleaned off with Scotch-Brite before polishing.

Some of your car's driveline pieces can

also benefit from elbow grease. Ball diff rings and planetary diff bevel gears will perform their transfer duties much more effectively after they have been smoothed.

Other drive-system parts that will profit from work are the dogbones and outdrives on off-road buggies and trucks and on touring cars. "Polishing a steel dogbone axle isn't so tough," you say, "but how do I smooth out the inside portion of a outdrive yoke?"

Fear not! I install regular cotton swabs (cut in half) in my Dremel. Because the swabs are fragile, keep the rpm low; it usually takes two to three swabs to put a good shine on a yoke's innards.

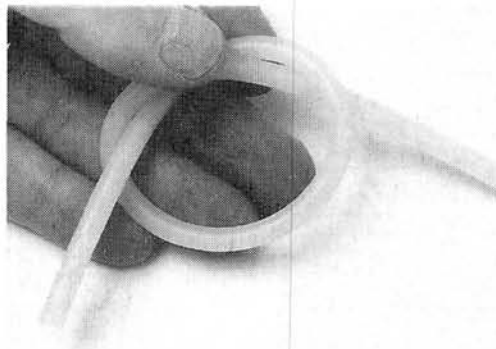


The parts that can be polished to help your ride perform better include diff rings, shock shafts and dogbones.

ULTRA-FINE SMOOTHING

For folks who want the ultimate in smoothness, I recommend that you try jeweler's rouge—a buffing compound that comes in a hard stick. Buy the appropriate grade for your project; it's available for chrome, gold, silver, aluminum and even plastics!

You have to apply jeweler's rouge with a flannel buffing wheel, and you must wear eye protection and a dust mask, but the results will be well worth the efforts. For better control, mount the buffing wheel in a tabletop grinder; if you're using a regular hand drill, secure it to the table as well.



To hold certain metal items (especially shock shafts), grip them with rubber tubing so you don't scratch them.

FOR SALE

To get an R/C vehicle and parts ready to sell, many R/C'ers spray clear lacquer on aluminum and steel components. Another trick they use to help sell "used iron" is to smooth out anything that spins or moves up and down. Why? Because when potential buyers check out a "like-new" R/C weapon, what do they do? They spin the wheels and work the suspension! A car or truck with a ton of shiny, well-polished parts can mean the difference between a quick sale and just more dust and cobwebs on the car!



Happich Simichrome is an excellent metal-polishing paste that can be used on just about any metal surface; it really helps to smooth out shock shafts and hinge pins.

*Addresses are listed alphabetically in the Index of Manufacturers on page 248. ■

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KO PROPO EX-1 Mars

The latest radio from KO Propo meets the needs of all racers—entry to competition level—with System Level, a unique feature that sets it apart from the competition. System Level matching lets users tailor the Mars' programmability to suit their comfort and experience with four levels to choose from. Another feature—Direct Set Programming—enables racers to program grip dials for instant fine adjustments without proceeding through the main menu. The radio also offers 10-model memory, ABS braking, fuel timer and memory restoration.

Part no.—KOPJ10;
price—\$349.99.

KO Propo; distributed by Great Planes Model Distributors, 2904 Research Rd., Champaign, IL 61826-9021; (217) 398-6300; fax (217) 398-0008.

TEKIN

G12c III Speed Control

This new speed control—1997 world champion in the high-power 4WD class and TQ in 2WD—uses new software for better throttle response. It also offers better micro-glitch filtering for more solid performance and low-voltage booster circuitry so that full-bottom-end punch is always available.

Part no.—1121;

price—\$199.99

Tekin Electronics, Inc.,
940 Calle Negocio, San
Clemente, CA 92673-6201;
(714) 498-9518; fax (714)
498-6339.



TRINITY

Team Kinwald XX-4 Aluminum Motor Clamp

Looking to safely fasten your motor AND keep your motor cool? Trinity's latest blue-anodized aluminum motor clamp does both tasks in one shot. Oh, and it looks pretty neat, too!

Part no.—TK3012;

price—\$19.99

Trinity, 1901 E. Linden Ave., #8,
Linden, NJ 07036; (908) 862-
1705; (908) 862-6875.



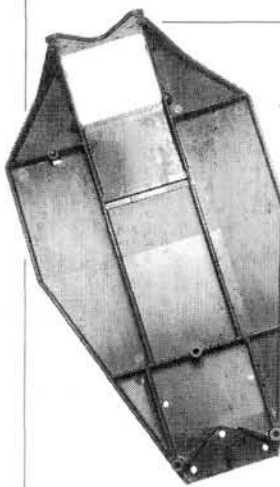
PROGRAPHIX

Graphic Maker System

You can cut custom vinyl graphics in a range of sizes with this system which is compatible with both Mac and PC software. The system comes complete with a 15-inch cutter/plotter and all the necessary software.

Part no.—PNC960; price—\$2,495.

Prographix Vinyl Cutting Systems, 3186
Airway Ave. #E, Costa Mesa, CA 92626;
(714) 540-7750; fax (714) 540-7556.



ASSOCIATED

Extra-Long Chassis for RC10T3

This new extra-long chassis for the T3 provides handling advantages under many different track conditions. The longer wheel-base brings the truck to the maximum ROAR-legal specifications and gives the T3 more high-speed steering. On high-bite tracks, the longer chassis helps prevent the truck from wheel-standing under acceleration while the longer platform also provides greater stability in jumping and on rough sections of track. The chassis is also available in graphite for ultimate strength and rigidity. Both versions require the use of a longer battery brace.

Part nos. and prices—7308 (plain chassis), \$35; 7309 (carbon chassis), \$25; 7333 (plain battery brace), \$3; 7334 (carbon battery brace), \$5.

Associated Electrics, 3585 Cadillac Ave., Costa Mesa, CA 92626;
(714) 850-9342; fax (714) 820-1744.

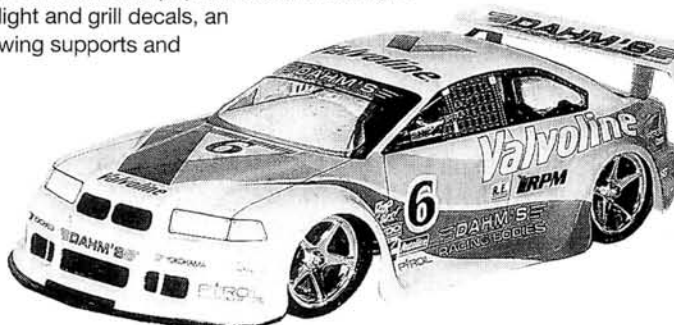
DAHM'S

M3GT Extreme

This new 1998 two-door GT coupe body offers low, wide aggressive styling with race-winning ground effects. Designed to fit standard and popular sedan chassis, its details include headlight, taillight and grill decals, an extreme wing, aerodynamic wing supports and molded-in trim lines.

Part nos. and price—D256
(.030 Lexan), \$19.98; D257
(.040 Lexan), \$20.98.

Dahm's Racing Bodies, P.O.
Box 360, Cotati, CA 94931;
(707) 792-1316;
fax (707) 792-0137.



SCHUMACHER

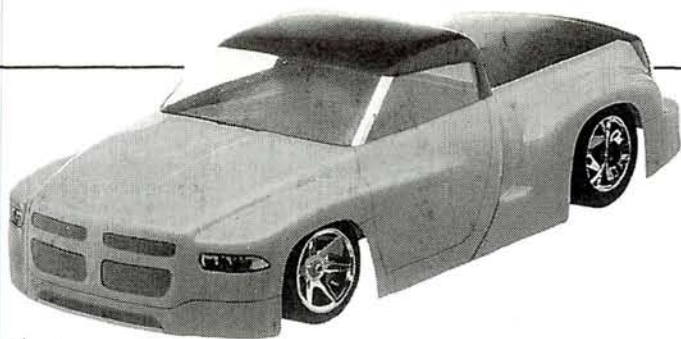
Pink Compound Tires

This all new tire compound is designed for hard and dusty surfaces and offers superb traction and side bite with an excellent wear rate. The compound is available for both on- and off-road use; the performance and life of the SST slicks are dramatically increased by applying tire-beltting tape to the inside of the tire to prevent tire growth and increase stability at high speeds. The use of sponge inserts is strongly recommended with both on- and off-road versions.

Part nos. and prices—

U6639 (on-road super-narrow), \$8.50; U6640 (on-road standard), \$8.50; U6641 (4WD front mini-pin), \$9.95; U6642 (rear mini-pin), \$10.95; U6643 (2WD front mini-pin), \$9.95.

Schumacher, 6302 Benjamin Rd., Ste. 404, Tampa, FL 33634; (813) 889-9691; fax (813) 889-9593.



PARMA

Dodge Sidewinder Truck

The Sidewinder—Dodge's latest concept truck, which has been given rave reviews on the new car show circuit—is now available in 1/10 scale. It fits perfectly on all the popular touring car chassis as well as on Parma's Good Times and monster truck chassis. Made of .040 clear Lexan, the body is 7.5 inches wide.

Part no.—10195; price—\$18.

Parma International, Inc., 13927 Progress Pkwy., North Royalton, OH 44133-4394; (216) 237-2650; fax (216) 237-6663.

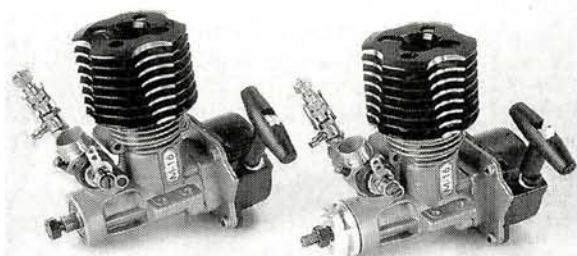
DYNAMITE

Dished Piston Conversion

The power-enhancing design of the dished piston included in the Dynamite .12PD engine can now be used with other engines. The piston conversion contains all the internal components that come standard with the .12PD, including the piston and piston sleeve configured to original design specs, a new heat-sink head that fits the combustion-chamber shape and a special crankshaft for advanced timing of the engine. A Dynamite Super Rod, wristpin, head shims and thoroughly illustrated instruction manual are also included with the package.

Part nos.—DYN6160 (conversion for TNT .12R engine); DYN6161 (conversion for O.S. R.Z. and CV engines); price—\$84.95.

Dynamite; distributed by Horizon Hobby Distributors, 4105 Fieldstone Rd., Champaign, IL 61821; (217) 352-1958; fax (217) 352-0355.



MEGATECH CORPORATION

M-16 Series Engines

This new series of car engines offers a larger .16 displacement for increased torque and top speed without having to change the physical mounting dimensions of the engine. True ABC piston/cylinder assemblies provide maximum power and longer life while machined aluminum heat sinks deliver cooler runs. A sealed, twin-needle rotary carb makes tuning simple, while the special front bearing minimizes fuel leakage and power loss. An included recoil starter eliminates the need for additional starting equipment. Standard and pre-cut crankshaft versions are available. **Part no.—MTC1600X (standard); MTC1605Xaz (pre-cut); price—\$79.95.**

Megatech Corp., P.O. Box 32, North Bergen, NJ 07047; (201) 662-8500; fax (201) 662-1450.

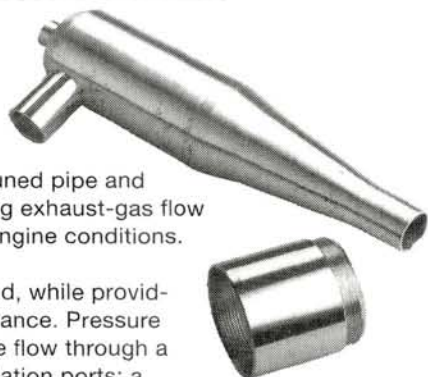
INNOVENTIVE TECHNOLOGIES

CVEC Power System

Until now, tuned pipes were the most efficient way to harness the power of your 2-cycle engine. The CVEC Power System has all the advantages of the tuned pipe and overcomes its weaknesses by regulating exhaust-gas flow to respond more efficiently to varying engine conditions. The self-contained mechanical system prevents over-scavenging at the low end, while providing a high-velocity path for top performance. Pressure regulation is achieved by controlling the flow through a series of geometrically positioned regulation ports; a careful balance is established between exhaust pressure on the head of the piston and calibrated spring pressure. It's suited to a range of 2-cycle engine applications, including on- and off-road.

Part nos. and prices—HSU-100 (straight-through exhaust system), \$49.52; HSS-100 (side-exhaust system), \$49.52.

Innoventive Technologies, 16025-23 Mile Rd., Macomb Twp., MI 48242; (810) 677-2310.



Descriptions of the products shown here were taken from manufacturer and/or advertising agency press releases. The information given does not constitute an endorsement by Radio Control Car Action or guarantee product performance or safety. When contacting a manufacturer about any product described here, be sure to say you read about it in Radio Control Car Action. Manufacturers! To have your products mentioned here, send press releases to R/C Car Action, What's New, 100 East Ridge, Ridgefield, CT 06877-4606.

SANYO

For some time, it has been common knowledge among the top matchers that a 20A-discharge rate is no longer adequate to obtain maximum cell capacity for 4-minute modified class racing. Especially now. With new RC-2000 cells, a cell discharged at 20 amps runs for approximately 400 seconds (or 6.6 minutes), which is more than two and a half minutes (65 percent) longer than a race heat or A-main. There can be a big difference in individual cell performance when you cut the discharge time to four minutes. Cells that performed the same at a 20A discharge often will not continue to be the same as the discharge amp rate increases.

By using a 30A-discharge rate on its high-end World-Tech and VIS-EXTRA matched packs, Trinity matches the cells at rates closer to what the cells will actually see on the racetrack. Real NASCAR, F1 and Cart teams do not dyno their engines at the rpms they see at 55mph, they dyno them at actual rpm rates and loads they see when they are on the track. The closer you can match your cells to the way they will run on the track, the better your packs will perform in race situations.

The only drawback of matching packs at these higher amp rates is that the numbers become impossible to compare with the 20A numbers many of the smaller cell matchers still use. Twenty amps is still fine for matching cells for stock-class and 8-minute racing, but the higher capacity of the RC-2000 has made 20A matching for modified classes a thing of the past.

Once again, Trinity, the leader in battery-matching technology, has made it easier for the consumer to obtain the best possible battery packs. Trinity was the first to put a sticker on the outside of their battery packaging, with the numbers of the lowest cell in the packs so that there are no surprises when you open the box. They have gone one step further: Trinity now includes 20A numbers, as well as the actual 25A or 30A numbers, at which their Race-Tech, World-Tech and VIS-EXTRA packs are matched. What this means for the consumer is less confusion over battery numbers and the ability to compare packs more easily. No more working out conversion formulas to compare a 30A- to a 20A-battery pack.

Technology keeps rolling on and the racers keep going faster.

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TEAM ASSOCIATED RC10T3

(Continued from page 92)

slightly more forward by adding one foam spacer between the battery and the rear bulkhead. This actually helped keep the front end on the ground during hard acceleration and had no ill effects on the truck's rear traction. Spacing the rear hubs all the way to the back of the truck may also prevent the front end from lifting.

A small drop-off jump that was followed by a sharp, right-hand turn best demonstrated the improved balance of the T3. While it was still in the air after the jump, I steered the front wheels in the direction of the upcoming turn. The outside front wheel landed first and began to lead the truck in the direction of the turn. When the remaining wheels touched ground, the T3 showed no signs of skidding or rolling; it simply made the turn with a fluid motion.

Using the T3's recommended setup and kit tires, I TQ'd and won with it on the first outing.

Over the weeks that followed, I raced the T3 several more times and had similar success, and my initial opinion holds: this truck retains the aggressive handling of its predecessor, yet it's more stable because of careful tweaking of its suspension geometry. On rough, outdoor tracks, I believe that the T3 may benefit from a slightly longer chassis (which is now offered by Associated and will be included with regular, production T3 kits). On smaller tracks with fewer bumps, the truck offers more steering than you'll usually need (dialing out some steering throw on your transmitter can sometimes be the hot ticket), so getting through the tight stuff is as easy as with a buggy.

FINAL THOUGHTS

Associated have accomplished two things with the release of the T3: they have improved on the excellent handling of the T2, and they have significantly streamlined their product lineup (the T3 shares 87 percent of its parts with the B3 buggy). I found the T3 easy to assemble and tune. For a perfectionist like me it does require a bit more hand-fitting than some other kits I've built. For example, bleeding the shocks *perfectly* requires a bit of patience. Points worthy of high praise include the Stealth tranny (which I believe is still the benchmark) and features such as the included MIP CVD drive shafts, improved slipper clutch and, of course, the molded tools.

I recommend the T3 to anyone who likes to drive precisely. This is an aggressive-handling truck that has all of the niceties for which Associated kits are renowned. It's also better on rough tracks and much easier to work on. Overall, it's a worthy successor to the RC10T2.

*Addresses are listed alphabetically in the Index of Manufacturers on page 248. ■

MCLAREN F1 GTR TF-3

(Continued from page 100)

was a problem because of the thin grease used in the bevel diffs. With virtually no "limited slip" action coming from the diff grease, the TF-3 quickly found the wheel with the least traction and dumped all the horsepower into it, which killed any semblance of traction the car may have had. The under-damped suspension didn't help matters, either. The TF-3 squatted under acceleration, which spun the front wheels; it would dive under braking, and this caused the unweighted rear end to swing around. Although the car's drive train was whisper-quiet, and top speeds were ballistic (courtesy of the Phantom powerplant), the joy of speed was marred by the disappointment of spinout after spinout. I quickly decided it was time to hit the bench and do a little wrenching to unlock the performance potential that I knew the car possessed. The changes I made to the suspension and diff action (detailed in "Building and Setup Tips") helped, but it was tire selection that seemed to have the biggest impact on the TF-3's handling prowess. A set of Kawada's Yellow (medium softness) slick tires was a big improvement over the firm kit tires, but the best handling balance was achieved with a set of Pro-Line's* new S2-compound Sedan Slicks. With the new skins in place, the TF-3 was capable of turning fast laps without requiring Masami-like driving skills. I must grudgingly admit, however, that Kyosho's optional ball diffs would probably take the TF-3's handling to the next level. Nobody wanted to love those gear diffs more than I did!

FINAL THOUGHTS

Though Kyosho's take on the McLaren F1 GTR is worth the price of admission based on good looks alone, the fact is, there is a competent racing chassis under the coachwork, and that only makes the TF-3 more desirable. Sure, it needs a little tweaking to be "comp ready," but Kyosho definitely delivers the basic tools to get the job done. To be fair, my "Joe Racer" mentality probably puts me in the minority among R/C'ers. Judging by the email and letters we receive, most hobbyists aren't racers but rather enthusiasts who like low-maintenance (think gear diffs), cool eye-candy (like the trick chassis and alloy shocks) and scale realism (just look at that McLaren body!). Whether you decide to make the TF-3 your ultimate race machine or just the coolest parking-lot cruiser on your block, you're sure to have a lot of high-speed fun with Kyosho's latest.

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A complete sticker sheet is included with the new Street Weapon kit. Along with the typical detail stickers—such as: headlights, taillights, grill, etc.—is a large stripe and logo sheet. This sticker sheet can be applied to a single color body and transform it into one that looks as though it took several days to paint. Some of the stripe stickers on the logo sheet are very large, and they can be a little tricky to apply. There is, however, a quick tip that will make application simpler.

First, trim around the sticker as you normally would so that it can be removed from the sheet. Before removing the sticker, spray window cleaner on the area of the body where it will be applied. Remove the sticker and apply some window cleaner to the back (adhesive) side. When the sticker is positioned on the body, it can be moved around slightly so that you can place it exactly where you want it. Once the sticker is in the desired location, start from the center and press it firmly against the body working out to the edge of the sticker.

Using this technique to apply the stickers to your Street Weapon body will result in a more finished body. The stickers will be positioned perfectly, and they won't have any air bubbles underneath.

GET A BETTER SEAT

If you are having trouble getting the low-profile touring-car tires to seat into the wheels on the Street Weapon, try trimming a small amount of rubber off the mounting bead of the tire. Trim about 1/32 inch from the inside edge of the tire. This edge will rest against the inside rib of the wheel. By removing a slight amount of rubber from this area, the tire will seat in the wheel more easily and will result in rounder, truer running tires.

LESS IS MORE

Remember that just because the front wheels on a car turn farther doesn't necessarily mean that the car will have more steering. This is especially true of the Street Weapon. Since touring cars run on paved surfaces, the traction at the front tires is usually very high. I've seen many touring cars that have too much steering throw dialed into them. It's not uncommon for a dialed-in car that is running great only to be able to turn a full circle at slow speed in an 8- to 10-foot diameter space. If your car's inside wheel flops back and forth when it rounds a corner on the track, chances are you have too much steering throw dialed in on your transmitter. Take out some steering throw and see what happens; you may be surprised to find that you actually gain steering on the track.

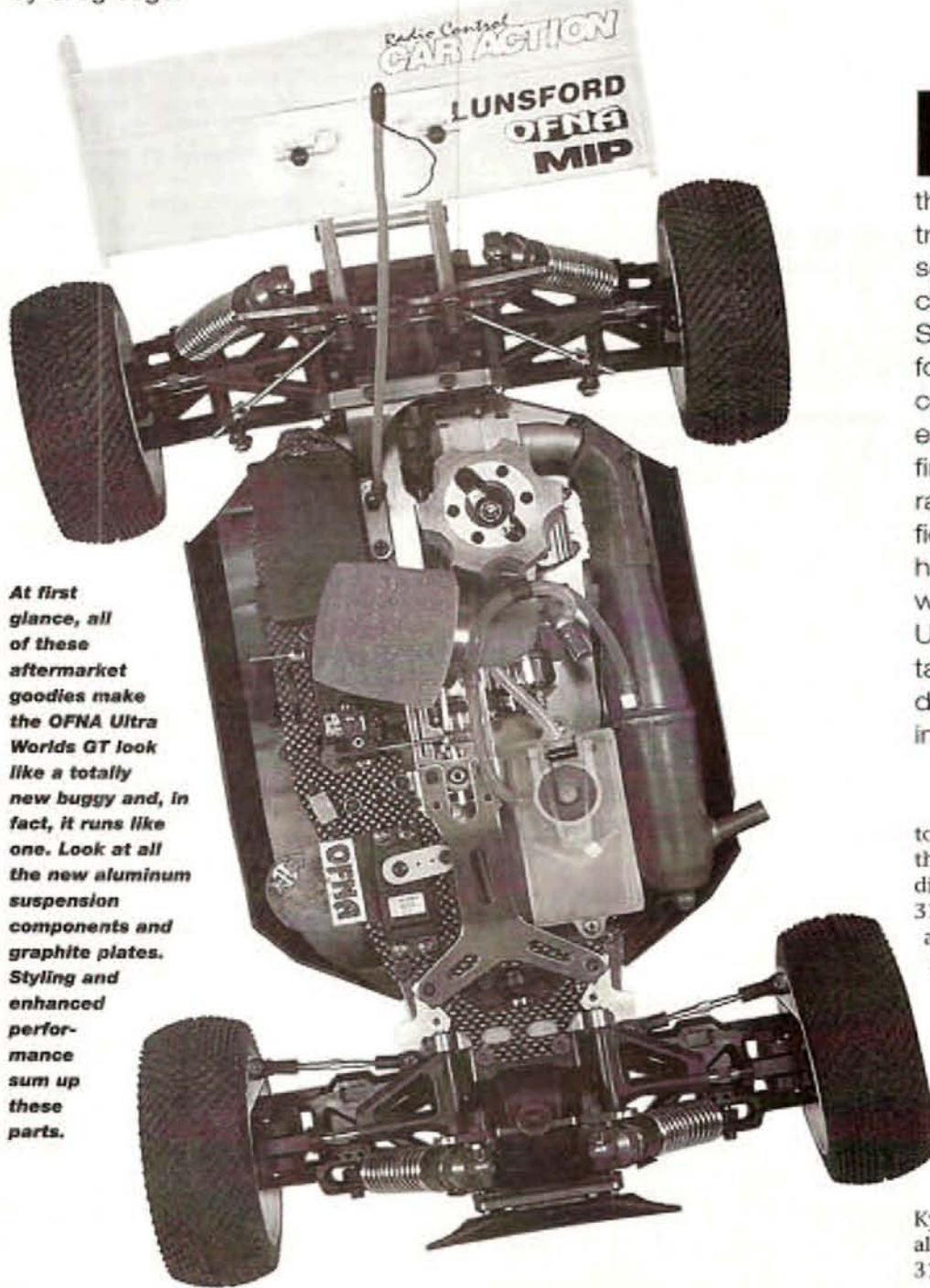
Let us know what's going on! Address your questions or problems to Team Losi, "Tech Talk," 13848 Magnolia Ave., Dept. J, Chino, CA 91710.

Tuning and
Modifying the

OFNA

Ultra Worlds GT

by Greg Vogel



At first glance, all of these aftermarket goodies make the OFNA Ultra Worlds GT look like a totally new buggy and, in fact, it runs like one. Look at all the new aluminum suspension components and graphite plates. Styling and enhanced performance sum up these parts.

EARLIER THIS YEAR, I had the pleasure of reviewing the OFNA* Ultra Worlds GT and putting it through its paces at our local race-track, where the popularity of 1/8 scale has grown so much that it claims the largest turnout each Sunday. The stock Worlds GT performed extremely well against the competition, and I never failed to end each day with a win or a top-five finish. But then Frank Masi—my racing arch-rival—debuted the modified Kyosho* MP-5 he had used for his MP-5 "Second Look," and there was no way to catch him. I knew the Ultra Worlds GT would be up to the task with a few mods of its own, so I decided it was time to modify and improve OFNA's top dog.

OFNA has an excellent line of hop-up parts to choose from for the Worlds GT. I started in the center of the car by replacing the planetary diff with a torque-sensing differential (part no. 31320). What, exactly, does that diff do, you ask? Here's how it works: unlike conventional gear diffs, which tend to "unload" and send power to the wheels without traction—exacerbating any low-traction problems—the torque-sensing diff is able to determine which end of the car has more traction. It then biases the power delivery to favor whichever end has more grip; this allows for better control and speed. OFNA recommends that the sealed unit be filled with thick silicone oil; I chose 10WT Kyosho oil. While I was replacing the diff, I also bolted on the steel upgrade gear (part no. 31040) for added durability.

Next, I turned my attention to the drive shafts. For smoother power transfer, I replaced the center and rear dogbones and the front universals with MIP's* venerable CVDs. The GT's stock gear diffs are unsealed, which prohibits the use of silicone oil as a lubricant. I replaced the stock units with OFNA's soon-to-be-released sealed differentials, then filled the front with 30WT Kyosho silicone oil and the rear with 50WT. Frank uses this setup in his buggy; it allows the car to "diff" more on the rough track we race on, and it benefited my buggy as well. Diff action in an 1/8-scale car is crucial to its handling, and high viscosity oil will allow the diffs to transfer the power better in bumpy conditions. Conversely, thicker oils provide greater speeds on smooth tracks.

While I was fooling around in the drive train department, I decided to try out an O.S.* RX-B I had sitting on my shelf. The engine was outfitted with a Kyosho manifold and a double-disk flywheel (part no. IFW11) for brake clearance. The engine dropped in without a hitch, thanks to OFNA's aluminum engine mounts (part no. 31190). These finned mounts help to keep the engine cool, and they look terrific, too. A blue OFNA pipe coupler (part no. 10184) was added to connect a Paris tuned pipe, and a blue air cleaner (part no. 36502) with foam cover (part no. 36501) and (part no. 10029) a blue air-filter tube allowed the engine to breathe while it kept dirt out—and the blue parts look mighty trick!

(Continued on next page.)

SETUP

Surface: dry and bumpy; hard-packed dirt/clay

FRONT END

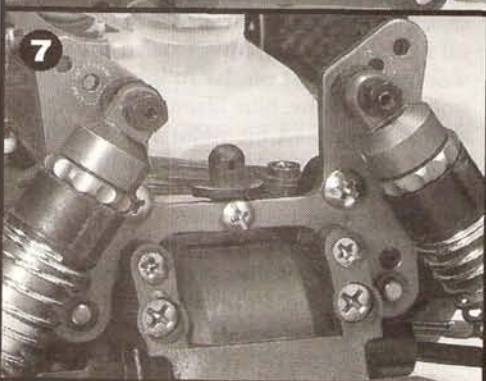
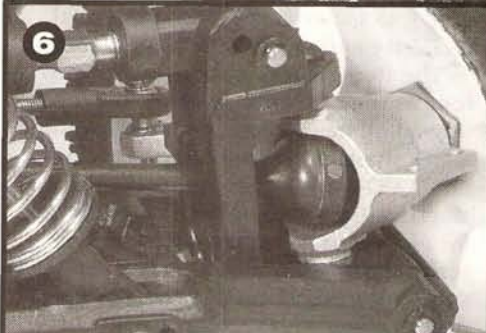
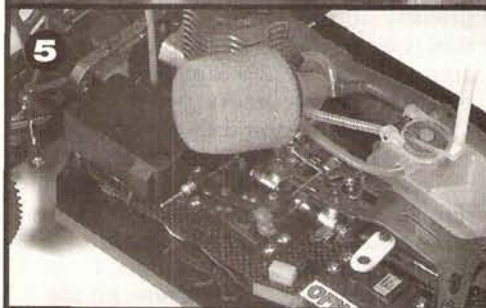
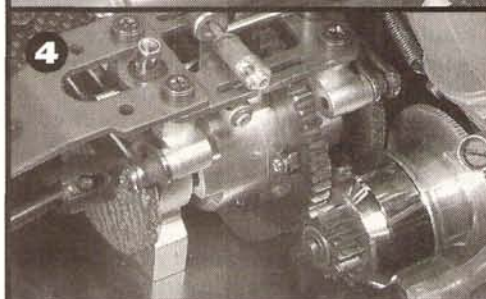
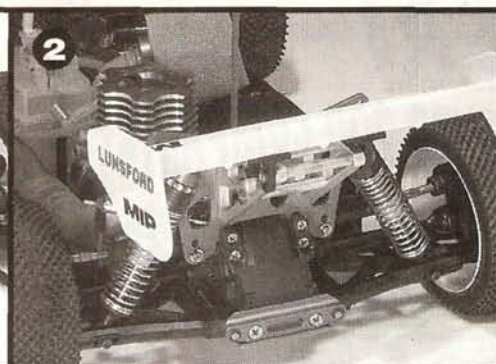
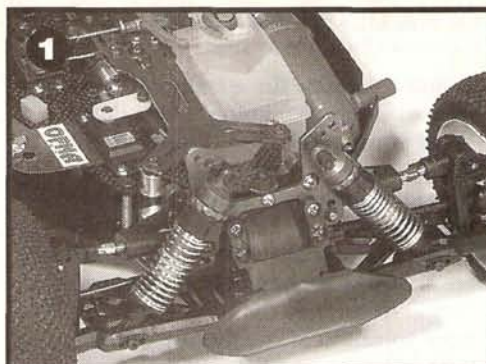
Shock oil..... 25WT Associated
Pistons 2-hole O-ring
Ride heightdrive shafts slightly above level
Toe-in/out.....1-degree toe-out
Camber 1-degree negative
Upper-arm position lower inside,
far outside
Swaybar disengaged
Diff oil 3,000WT Kyosho

CENTER DIFF AND BRAKES

Diff oil used10,000WT Kyosho
Brakes..... stock disk at stock settings

REAR END

Shock oil..... 30WT Associated
Pistons..... 2-hole O-ring
Toe-in plate optional block
Camber1-degree negative
Ride heightdrive shafts above level,
almost straight
Upper-arm position lower inside,
far top outside
Swaybaryes
Diff oil used 5,000WT Kyosho



1. A new shock tower, MIP CVDs and XX-pattern tires keep the car on track, while titanium shock shafts, tie rods and hinge pins from Lunsford deliver a rock-solid front end. ■ 2. There are as many options available in the rear as there are in the front. Here's a good look at one of the aluminum suspension braces. The wing mount is made of strong aluminum stock, too, and attached is a Kyosho neon-yellow wing that matches the rims ever so nicely. ■ 3. Let's hear the oohs and aahs! The O.S. RX-B engine looks sweet as the powerplant for the Ultra Worlds GT. An OFNA air filter with foam cover and blue extension tube is attached to the carb. The Paris tuned pipe is connected by a long blue OFNA coupler on the other end of the engine. ■ 4. At close range, the torsion differential just looks like a cool aluminum case, but the gears that make the magic and put the power down are inside. The diff is supported by aluminum mounts with ball-bearing brake cam supports. Notice, too, the Kyosho clutch assembly; it gives the right amount of clearance for the brake pad. ■ 5. The graphite radio plate is a must, simply because it looks trick. (O.K.; it's strong, too.) Check out the aluminum bellcranks at the bottom right corner; they ride on shafts with ball bearings. ■ 6. Let's count the optional parts in this one area: steering knuckle, MIP CVD, Lunsford tie rods and hinge pins, new shock shaft, new rim and tire ... whew! ■ 7. & 8. The new geometry of these shock towers makes all the difference in the world to the car's handling. Again, notice the wing mount on the rear: many R/C'ers make this their first aftermarket purchase.

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| Barracuda | Lightning Rod | Sassy |
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OFNA ULTRA WORLDS GT (Continued from previous page.)

Since the new drive train and engine were undoubtedly going to put down a lot of power, I felt it was necessary to improve the strength of the vehicle. I started with OFNA's aluminum center mounts (part no. 31060) to house the torque-sensing diff. These quality mounts are an awesome upgrade; they have an O-ring to prevent the output bearing from spinning in the mount, and ball bearings support the brake cam for smooth operation. I noticed that the screws that hold the brake pads seemed to go in too easily; I used red Loctite on them so they would not back out (if you do this, remember that red Loctite will make parts difficult to remove later). I replaced the stock aluminum radio plate with a new graphite radio plate (part no. 31280) not only to strengthen the car, but also to make it look more trick. The front brace has also been replaced with a graphite brace (part no. 31270); the brace is not for the Worlds GT but rather for the standard-issue Ultra, so I had to modify it by drilling new holes for the steering-support screws. If you attempt this mod yourself, be extremely careful when drilling, as there is not a lot of room for mistakes.

The heft and horsepower of an 1/8-scale racing buggy can easily overtax an insufficiently stout steering system, so I beefed things up with OFNA's aluminum servo arms (part no. 31220) supported by ball-bearing servo shafts (part no. 31130). This resulted in ultra-smooth steering action. When you build the bellcranks, use a servo-saver spring on both sides and replace only the lower arms. New, machined-aluminum hub carriers (part no. 36513) replace the cast units. I noticed that the kingpin screws hit the CVDs, so I shaved them for additional clearance and secured them with Loctite.

The stock shocks work excellently as long as they are built properly, but a little upgrading never hurts. I added titanium shock shafts in the front and rear with OFNA's O-ring pistons but retained the stock springs, as these were working well for me. Color-coded tuning springs are ready and waiting in my pit box for quick suspension adjustments down the road. After playing with varying weights of shock oil, I found that 25WT Associated* oil in the front and 30WT oil in the rear worked very well on the rough track. I bolted on a new, blue aluminum front-shock tower (part no. 36501) and a rear-shock tower (part no. 36502), which features new shock options. The new shock-mounting options improve the overall stability and handling of the car. Camber and toe positions also greatly affect the Worlds machine, so I installed a full set of OFNA-exclusive Lunsford* titanium tie rods to make camber adjustments a snap.

While I was at it, I also installed matching titanium hinge pins, which are also OFNA exclusives made by Lunsford. The removable hinge supports have all been replaced with blue-anodized aluminum supports: front rear upper (part no. 36505), front back holder (part no. 36504), rear back holder (part no. 36506), and front lower holder (part no. 36503).

Believe it or not, there are a couple more things I replaced (as if I hadn't done enough already). I replaced the plastic wing supports with tougher aluminum wing supports (part no. 31210). I also purchased a Kyosho yellow wing to match the OFNA yellow 5-spoke rims (part no. 86047) with XX-pin spike tires (part no. 86091). These inexpensive tires have some serious traction, and they can really tear up a race course.

To get the goodies around the track, I chose a Futaba* 3PDF radio with a Futaba 9304 servo for throttle and brake. An Airtronics* 94151 servo supplies plenty of torque and speed for the steering, while a Dynamite* 5-cell receiver pack provides the power. I also chose Dynamite's 20-percent fuel to burn in the O.S. RX-B engine.

UPGRADED PERFORMANCE

I mentioned that I did well with the stock Ultra Worlds GT, but when I tried the newly upgraded GT, the difference was definitely noticeable. All the combined parts brought this racecar up to a new level, and all I could say on race day was, "What a rush!" The car qualified with a time that was more than a lap faster than the rest of the field. The soft suspension with the different geometry in the shock towers capably absorbed the bumps and allowed the new drive train to really lay down the ponies. The XX-tires hooked the buggy into a fast groove, and from then on there was no looking back except to check out the rooster tail.

By day's end, the OFNA Ultra Worlds GT "Second-Look Edition" took the number-one position after the 10-minute Main. I am very pleased with its outstanding performance, and many other competitors were also quite impressed—Frank included. Unfortunately, our outdoor racing season is just about ready to close! I'll finish the year with my OFNA Ultra Worlds GT and then store it in a safe place to hibernate for the winter; it will be ready to terrorize the competition next year.

*Addresses are listed alphabetically in the Index of Manufacturers on page 248.



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Revelation Raceway, 4871 State St., Montclair, CA 91762; Tim Bump, (909) 464-8247

- Ripon R/C Speedway**, 701 N. Acadia Ave., Ripon, CA 95366; Dan Tanis, (209) 599-5160
Simi Valley Groundpounders, 205 Tierra Rejada Rd. (behind Simi Valley Drive-In), Simi Valley, CA 93065; Jack Kasten, (805) 584-8211
So. Cal R/C Raceway, 19118 Brookhurst St., Huntington Beach, CA 92646; Jim Blauvelt, (714) 963-7484
S.R.S Offroad Raceway, 1038A N. Davis Rd., Salinas, CA; Randy Loveless, (408) 424-4044
Stockton Raceway, 3133 N. Adart Rd., Stockton, CA 95215; Ultimate Hobbies, (209) 472-1991

Key to Symbols

- Indoor**
- Outdoor**
- Off-road**
- Oval**
- Dirt oval**
- Carpet**
- Concrete**
- Asphalt**
- On-site hobby shop**
- AC power**
- Auto lap-counting**
- Food available**

- Team Air Racing Club**, 18208 Imperial Hwy., Yorba Linda, CA 92686; Don or Nicky, (714) 579-7488
Track Heaven, 6196 Child's Ave., San Diego, CA 92139; Loure, 475-2020
Tri-Valley Auto Racers, Livermore Elks Club, 940 Larkspur, Livermore, CA 94550; Roger Van Maren, (510) 449-0982
Ultimate Hobbies, 2143 N. Tunstun Ave. #6, Orange, CA 92665; Cliff Murukami, (714) 921-0424
Valley R/C Racepark, 146 S. Santa Fe St., Hemet, CA 92344; Valley Wide Recreation, (909) 654-1505 or 658-4322
Zach's Racing Shack, 4590 Saddle Mountain Ct., San Diego, CA 92130; Zach Bluemer, (619) 792-0414

COLORADO

- MHOR R/C Raceway**, 15540 East Batavia Dr., Aurora, CO 80011; Jess Brockman, (303) 343-0151
S&T R/C Raceway, 323 Auburn Dr., Colorado Springs, CO 80909; Tim Bishop, (719) 574-2910
Valley West R/C Club, 2202 I Road, Grand Junction, CO 81505; Waymond Williams, (970) 242-8846

CONNECTICUT

- E.A.R.T.H.**, 2380 Main St., Rocky Hill, CT 06067; Ziggy Kwasnicki, (860) 296-5418
East Lyme R/C Kar Klub, Society Rd., East Lyme, CT 06333; Steve Brown, (860) 739-2911

K/N R/C Speedway Inc., West St.,
Stafford Springs, CT 06076; (860) 684-
9896

A C E C E A S I D O R R

Manchester Recreation and
Entertainment Center, 290 Kott St.,
Manchester, CT 06040; Peter Tierinni,
(860) 646-6243

A C E C E S I D

R/C Madness, 640 Enfield St., P.O. Box
64, Enfield, CT 06082; Christopher
Marcy, (860) 741-6501

A C C E C E S I D R R

Xtreme Radio Control, 469 Danbury
Rd., New Milford, CT 06776;
Paul or Pete, (860) 354-4703

A C C E C E S I D R R

DELAWARE

Eastcoast Off-Road, Rt. 3 Box 256 A,
Laurel, DE 19956; Darrin Shockley or
Steve Nelson, (302) 875-8160

A C C E S I D

The Hobby Outlet: Tracks of the
Outlet, Salisbury Rd., Dover, DE
19901; Steve, (302) 697-8350

A C C E S I D

Hobby Stop Speedway, RD4, Box 100,
Rte. 13, Seaford, DE 19973; Remy
Haynes, Jr., (302) 629-3944

A C C E S I D

FLORIDA

B+T R/C Central, 811 Playground Rd.,
Ft. Walton Beach, FL 32547; (904) 863-
1666

A C C E S I D

Branford R/C Speedway, Rt. 3, Box 240,
Branford, FL 32008; (904) 935-0758

A C C E S I D

Broward County R/C Race Club,
Mills Pond Park, Ft. Lauderdale, FL; Ed
Decembro, (954) 525-3304

A C C E S I D

Coral Springs Roadrunners, P.O. Box
9632, Coral Springs, FL 33075; Randy
Witte, (954) 474-5934 or Rick
Schwartz, (954) 344-1983

A C C E S I D

Fiesta 1/5 Scale Gas Oval/Road Course
Circuit, 1137 Candlewood Circle,
Pensacola, FL 32514; Tom Sirmon,
(904) 477-6419

A C C I

First Coast Speedway, 6410 Waltheo
Dr., Jacksonville, FL 32211; Bob
Thompson, (904) 743-2161

A C C E S I D

5-Fifty-5 R/C Raceway, State Road
555, Bartow, FL 33830; John
Goepferich, (941) 678-9111

A C C E S I D

Frontier Race Track, 15260 N.E. 244th
Ave., Salt Springs, FL 32134; Harold
Reel, (352) 685-2881

A C C E S I D

Gainesville R/C Speedway, P.O. Box
693, Melrose, FL 32666; 130 NW 14th
Ave., Gainesville, FL 32601; (352) 495-
3600

A C C E S I D

Greater Orlando Auto Racers, 970
Keller Rd., Altamonte Springs, FL
32714; Dave Mottin

A C C E S I D

Hobby World Raceway, 7273 103rd
St., Jacksonville, FL; Ray or Greg,
(904) 772-9022

A C C E S I D

The Hobby Stop Raceway, 5765
Manatee Ave. W., Bradenton, FL 34209;
Rich Konnen (941) 798-9638

A C C E S I D

The Hobby Stop Raceway, 2454 Land
O'Lakes Blvd., Land O'Lakes, FL 34639;
Rich Konnen, (813) 948-0606

A C C E S I D

Hudson's R/C Raceway, 590 Madeore
St., St. Decembrine, FL 32095; Steve
Hudson, (904) 826-4050

A C C E S I D

Louie Burton's R/C Raceway, 4215
Mustang Rd., Lakeland, FL 33803;
Louie Burton, (813) 665-1322

A C C E S I D

Miami R/C Raceway, 12546 S.W. 88
St., Miami, FL

A C C E S I D

Minreg R.C. Club, 6340 126th Ave.
N., Clearwater, FL 34624; David Fox,
(813) 787-6032

A C C E S I D

Morris Kohl's Raceway and Hobby
Shop, 1202 W. Waters Ave., Tampa, FL
33604; Morris Kohl, (813) 931-1626

A C C E S I D

My Rose, 1695 W. Indiantown Rd.,
Jupiter, FL 33458; Mark Watson, (407)
744-3800

A C C E S I D

NORRA, 3300 Santa Barbara Blvd.,
Naples, FL 33999; Jerry Pecar, (941)
455-9065 or Mark Benfield, (941)
263-6861

A C C E S I D

Ocala Radio Control Car Club, 3500
SE 30th Terrace, Ocala, FL 34471;
Steve Shook, (352) 694-5147

A C C E S I D

Paul's Stadium Raceway, 4511 W. Dr.
M.L. King Jr. Blvd., Tampa, FL 33614;
Paul Surette, (813) 872-8662

A C C E S I D

PBG R/C Motor Park, 6351 Barbara
St., Palm Beach Gardens, FL 33418;
Doug Gleason, (407) 743-9791 or Tim
Case, (407) 627-2608

A C C E S I D

Pro Hobbies Speedway, 715 N. Lake
Pleasant Rd., Apopka, FL 32712; (407)
886-4615

A C C E S I D

Port St. Lucie Racing, 3626 SW
Rivera St., Port St. Lucie, FL 34953;
Frank Spadavecchia, (561) 336-8711

A C C E S I D

Red's R/C Raceway and Hobbies,
1010 Creighton Rd., Pensacola, FL
32504; Linda Till, (904) 479-2330

A C C E S I D

River City R/C Car Club, 9711
Sharing Cross Dr., Jacksonville, FL
32257; Bill Fraden, (904) 268-1948

A C C E S I D

Sarasota Flat Track, 4900 Fruitville
Rd., Sarasota, FL 34232; Jim Wilson,
(941) 371-3689

A C C E S I D

South Daytona R/C Raceway, 2121 S.
Ridgewood Ave., South Daytona, FL
32119; Mike Bean, (904) 426-6481

A C C E S I D

South Palm Beach Racers, South
County Regional Park, West Boca
Raton, FL 33486; Mike Fazio, (561)
338-5367

A C C E S I D

Southwest Florida R/C Raceway,
2425 Rivers Rd., Naples, FL 33964;
Clyde Armstrong, (941) 455-1143

A C C E S I D

Superior Hobbies R/C Parking Lot
Racing, 430 E. Hwy. 436, Ste. #106,
Casselberry, FL 32707; Rob Michael, (407)
834-9299

A C C E S I D

Tallahassee R.C. Raceway, Tom
Brown Park, Easterwood Dr.,
Tallahassee, FL 32311; Roland
Costine, (904) 671-2814

A C C E S I D

Tampa Bay R/C Club, P.O. Box 10224,
St. Petersburg, FL 33733; Dick
Gillette, (813) 526-0744

A C C E S I D

Tampa Hobbystown R/C 4 Slot Car
Raceway, 15702 N. Dale Mabry,
Tampa, FL 33618; Max and Judy
Rosenroth, (813) 968-7233

A C C E S I D

Winterset Raceway, U.S. Rt. 27
South, Winterset Motel, Sebring, FL
33872; John Bisbee or Mac Myer,
(941) 699-1140 or (941) 385-4448

A C C E S I D

GEORGIA

A&S Hobbies & Raceway, 3389
Cypress Mill Rd., Brunswick, GA
31520; Edward Davis, (912) 264-5489

A C C E S I D

Dalton Raceway, 2300 Chattanooga
Rd., Dalton, GA 30720; (404) 226-6699

A C C E S I D

Echeconnee Superspeedway, 2149
Richardson Dr., Macon, GA 31206; Andy
Thompson or Cliff Kline, (912) 788-
8731

A C C E S I D

Hobby Town Raceway, 2301 Airport
Thruway, Columbus, GA 31904; Frank
Bastos, (706) 660-1793

A C C E S I D

HobbyTown Raceway, 225-B Tom Hill,
Sr. Blvd., Macon, GA 31210; Marcus
Lee, (912) 474-0061

A C C E S I D

Lake Mayer Raceway, 1430 Dale Dr.,
Savannah, GA 31406; Pat Rossiter,
(912) 354-0098

A C C E S I D

The Racer's Edge, 1530 Hwy. 19 N.,
Thomaston, GA 30286; Roger or Mark
Walls

A C C E S I D

Sandy Cross Speedway, Rt. 1, Box
1071, Hwy. 51, Royston, GA 30662;
Morris Phillips or Wayne Fowler, (706)
245-9573

A C C E S I D

SHILOH R/C Raceway, 6362 Shiloh
Rd., Hahira, GA 31632; Doug Burnett,
(912) 794-2507

A C C E S I D

Silver Wings Raceway, 5611
Riverdale Rd., College Park, GA
30349; M. Bradshaw, (770) 991-2225

A C C E S I D

Stinger RC Super Speedway, 3769
Maysville Rd., Commerce, GA 30529;
Deric Sauls, (706) 335-5006 or (706)
335-9044

A C C E S I D

Sugar Bowl R/C Speedway, 5272
Nelson Brogdon Blvd., Sugar Hill, GA
30518; Shelley Bailey, (770) 945-6709

A C C E S I D

Valdosta Hobbies, 3998 Inner
Perimeter Rd., Valdosta, GA 31602;
Ron Hood, (912) 244-2101

A C C E S I D

HAWAII

Garden Isle R/C Racers, 5855 Ahakea
St., Kapaa, Kauai, HI 96746; Arnold
Morales, (808) 823-0856

A C C E S I D

Kakaako Water Front Park Dragway,
98-029 Hekaha St., Aiea Bay #32, HI
96701; James Inkyo, (808) 487-5155

A C C E S I D

Keeki Lagoon Park, Leeward
Community College, Waipahu, HI
96797; (808) 676-5486

A C C E S I D

Maui R/C Racing Association, 430
Hookahi St., #13, Wailuku, HI 96793;
Tritch R/Hobbies, Radio Control
Association, (808) 244-0526

A C C E S I D

Pearl City Raceway, 98-029 Hekaha
St., Bay 32, Aiea, HI 96701; James
Inkyo, (808) 487-5155

A C C E S I D

Radio Control Hawaii, 474 Kalanikoa
St., S-104, Hilo, HI 96720; Glenn
Shiroma, (808) 935-5629

A C C E S I D

Team PRC Racing Club, 176 Mamo
St., Hilo, HI 96720; Charlie
Kawamoto, (808) 935-3561

A C C E S I D

IDAHO

Capital Dirt Burners, 301 N. Bruce,
Boise, ID 83712; Mike Ard, (208) 345-
3906

A C C E S I D

Dirt Stuff Plus, 5344 N. Yellowstone
Hwy., Idaho Falls, ID 83401; Brian
Krait, (208) 522-7576

A C C E S I D

River City Bandits, 4867 N.
Yellowstone, Idaho Falls, ID; Chris
Hummer, (208) 523-9846

A C C E S I D

Snake River R/C Raceway, 265
Highway 50, Hansen, ID 83334; Jim
Tattersall, (208) 423-5122

A C C E S I D

ILLINOIS

AJ's Raceway & Hobby, 10211
Kessinger Road, Dekalb, IL 60115; A.J.
Schultz, (815) 756-2772

A C C E S I D

C.I.R.C.A., 905 Bobbs St.,
Jacksonville, IL 62650; Sport 'n'
Hobby, (217) 245-1375

A C C E S I D

C&R Hobbies, 39 E. Jones, Milford, IL
60953; Ray Craighead, (815) 889-
4073

A C C E S I D

Dan's Hobby World, 18415 S. Halsted
St., Glenwood, IL 60425; Dan, Bruce or
Josh, (708) 754-7988

A C C E S I D

Diehard R/C Raceway, 300 N. Main,
Kewanee, IL 61443; Dick Jennings,
(309) 852-3700

A C C E S I D

Glenwood Raceway, 18417 Halsted,
Glenwood, IL 60425; Don's Hobby
World, (708) 754-7988

A C C E S I D

G&R Raceway & Hobbies, 533 Bank
Lane, Highwood, IL 60040; Randy
Rose, (847) 432-9600

A C C E S I D

HobbyTown Raceway, 9346 Virginia
Rd. Lake in the Hills, IL 60102; Mike
Hollingsworth, (847) 458-1777

A C C E S I D

HobbyTown Raceway, 2103 N.
Veterans Pkwy., Bloomington, IL
61701; Gary Pritts, (309) 664-4451

A C C E S I D

Leisure Hours R/C Raceway, 24121
W. Theodore, Bldg. 1, Plainfield, IL
60544; Scott Hill, (815) 439-1777
(track), (815) 439-1477 (shop)

A C C E S I D

Machesney Park, 1220 Shappert Dr.,
Machesney Park, IL 61115; (815) 282-
1311

A C C E S I D

Marty's R/C Hobby, 1335 E.
Broadway, Bradley, IL 60915; Gail or
Marty, (815) 933-8441

A C C E S I D

Miley Motor Speedway, 1109 N.
Bloomington St., Rte. 23., Streator, IL
61364; Doug, (815) 672-4212

A C C E S I D

Monie R/C Raceway, 26049
Ridgeland Ave., Monie, IL 60449; Roy
or Roberto Moody, (708) 534-2422 -
(track), (708) 799-5597 (office)

A C C E S I D

Pontoon Raceway, 3670 St., Rte. 111
Granite City, IL 62040-4304; Pat or
Skip, (618) 931-1206

A C C E S I D

Outlaw R/C Speedway, 1614
Broadway, Mattoon, IL 61938; (217)
234-6229

A C C E S I D

R/C Workshop, 3100 S.W. Adams St.,
Peoria, IL 61605; Al Kretz, (309) 673-
4860

A C C E S I D

Radio-Active Raceway, 751 N.
Bolingbrook Dr., #15, Bolingbrook, IL
60440; Jim, (630) 759-7557

A C C E S I D

Rector's R/C Raceway, RR 3, Box
104, Albion, IL 62806; Tim Wolfe,
(618) 842-9379 (M-F), (618) 446-
3251 (Sun.)

A C C E S I D

Shiloh Eagles Superspeedway, 308
N. Virginia Ave., Belleville, IL 62220;
(618) 277-6030

A C C E S I D

SIRCAR Raceway, 1200 N. Marion,
Carbondale, IL 62901; (618) 549-5885

A C C E S I D

Skokie Speedway, 4880 W. Dempster,
Skokie, IL 60077; Pete, (847) 674-
7349

A C C E S I D

Stanton Hobby Shop, 4718 N.
Milwaukee Chicago, IL 60630; Tim
Copeland, (773) 283-6446

Marble's Raceway, 4685 SE 40 St., Des Moines, IA 50317; Rick Marble, (515) 262-7507
Mr. Car Raceway, P.O. Box 1112, Central Iowa Fairgrounds, Marshalltown, IA 50158; Jim Gossett, (515) 483-2234

Outback Speedway, 403 State St., Guthrie Center, IA 50115; Helens Enterprises, (515) 747-3064

Radio Control Raceway Park, 2100 First Ave. N., Fort Dodge, IA 50501; Bernie Halverson, (515) 576-3780

Riverside Raceway, Veteran's Park, Algona, IA 50511; Mike Beisch, (515) 295-9352

Shentona Speedway, 1215 W. Lowell, Shenandoah, IA 51601; Doug Cross, (712) 246-5984

Wild Bill's Raceway, 901 W. Jones, Knoxville, IA 50138; William Anderson, JR., (515) 842-5973

KANSAS

Hobbytown USA, 2016 W. 23rd, Lawrence, KS 66046; Kevin Decembris, (913) 865-0883

Mike's R/C Hobbies, 121 SE 29th St., Unit #3, Topeka, KS 66605; Mike Barnard, (913) 266-5767

Ottawa Outlaw Raceway, 412 South Main, Ottawa, KS 66067; Tom Wilson, (913) 242-1450

R/C World Raceway, 217 Brownie Ave., Scranton, KS 66537; John and Kyle, (913) 793-2313

RCRC Raceway, 507 N. 4th, Atwood, KS 67730; Bob Dunker, (913) 626-3261

KENTUCKY

B&A Hobbies RC Raceway, 1741 Schrem Rd., Owensboro, KY 42301; William Rone, (502) 683-9776; fax (502) 686-7551

Dixon's R/C Raceway, RR2, Box 505, Hazard, KY 41701; Jeff Dixon, (606) 436-1902 or (606) 436-9559

Johnny's Speedway, 3114 North St., Lloyd Greenup, KY 41144; Charles, (606) 473-0075

Pit Stop Hobbies, 106 A Street, Benton, KY 42025; Robert Fitzgerald, (502) 527-8216

ProTrak R/C Racing, 3451 Cane Run Rd., Louisville, KY 40211; Tony Hardin, (502) 778-2657

Rick's Hobby Farm, 2089 Park Rd., Hawesville, KY 42348; Rick Early, (502) 927-8527

Terry's R/C Hobbies, 691 Garner Ave., West Liberty, KY 41472; Terry McGuire, (606) 743-2126

Trio Hobbies & R/C, 216 Redmar Plaza, Radcliff, KY 40160; Maurice Johnson, (502) 351-7547

West Kentucky R/C Hobbies, 45 Hawkins Loop, P.O. Box 21, Symsonia, KY 42082; (502) 851-3534

LOUISIANA

Al's R/C Store, 1529 Anita, Sulphur, LA 70663; Al Gaspard, (318) 625-5880 or (318) 437-8545

Baton Rouge Velodrome, 7122 Perkins Rd., Baton Rouge, LA 70815; Weldon Sharon, (504) 665-5616; open Sunday 10-4.

Cajun R/C Raceway, 728 Perry Lane, Opel, LA 70570; (504) 948-6350

Indy Speedway & Hobby, 3753 General DeGaulle Dr., New Orleans, LA 70131; Vince Sheetz, (504) 367-1891

Pontchartrain Hobby Shop, 3755 Pontchartrain Dr., Slidell, LA 70458; (504) 649-1199

Red River R/C Racers, 3203 Old Shed, Bossier City, LA 71111; David Gray, (318) 747-1863

MAINE

Clay Bowl R/C Hobbies, P.O. Box 61, Greene, ME 04236; Pat Cap, (207) 946-5003

R/C Speedway & Hobbies, 87 Main St., Fairfield, ME 04963; David Prescott, (207) 453-4588

MARYLAND

Cockeysville AstroDome Racers, 10854 York Rd. (rear), Cockeysville, MD 21030; Steve Balaz, (410) 666-2521

Countyside Raceway (portable), 406 Pamela Rd., Apt. C, Glen Burie, MD 21061; M&J's Pormotional Entertainment, (410) 761-6196

Doug's Raceway, 2935 Crain Hwy., Waldorf, MD 20601; Doug Moran, Jr., (301) 843-6220

Dusty Downs, 4665 Bethlehem Rd., Preston, MD 21655; Frank Show, (410) 673-2191

Hobby Town USA, 8223-11 Elliot Rd., Easton, MD 21601; Bill Dyke, (410) 820-9308

J.R.'s Race Place, 2935 Crain Hwy., Waldorf, MD 20601; James Radford, (410) 947-2766

Outback R/C Race Club, Maiden La., Manchester, MD 21102; Randy or Bonnie Henry, (410) 848-4350

The Track, 16806 Oakmont Ave., Gaithersburg, MD 20877; Mimi Wong, (301) 417-9630

MASSACHUSETTS

C&C Hobby & Raceway, 562 Russells Mills Rd., So. Dartmouth, MA 02748; Charlie, (508) 997-4131

Hi-Tech Hobbies, 1681 Broadway (Rt. 138), Raynham, MA 02767; Ruben, (508) 880-5373

Megadrome Raceway, Rt. 8 Curran Hwy., North Adams, MA 01247; Bob Blanchette, (413) 743-7223

New England R/C Headquarters, 33 Fr. Devalles Blvd., Fall River, MA 02721; Chuck Gregory, (508) 673-6069

Northboro Speedway, 168 Main St., Rte. 20, Northboro, MA 01532; Bob Trimble, (508) 393-8087

West Street Hobbies, 114C Main St., Medway, MA 02053; Jim, (508) 533-1231

MICHIGAN

Akright Outback Racing, 984 Zimmer Rd., Williamston, MI 48895; Steve Akright, (517) 655-4531

Capital Area Racing Society, The Plumbers Hall, 5405 S. Logan, Lansing, MI; Dave Halsey or Brad Smith, (517) 646-8224 or (517) 484-4028

Doug's Dirtway, 5210 Colby Rd., Owosso, MI 48867; Doug Conn, (517) 729-8376

Down River R/C Association/Riders, 1519 Oak St., Wyandotte, MI 48192; Dave McCaslin, (313) 287-7405 or (313) 284-1560

Freedom Hill R/C Raceway, 29330 Coolidge, Roseville, MI 48066; Curley Grewe, (810) 776-5483

House of Hobbies, 2863 West Shore Dr., Holland, MI 49424; (616) 786-3686

JT Superspeedway, W. Golden Ave., Battle Creek, MI; Jerry or Sam, (616) 965-0116

Larry's Performance R/C's, 43665 Utica Rd., Sterling Heights, MI 48310; Larry, (810) 997-4840

MCRRC Raceway, 4601 Page Ave., Michigan Center, MI 49203; Sam Sprang, (517) 787-9161

Newberry R/C Raceway, RR #3 Box 2860, McMillan, MI 49853; Dustin Hart, (906) 293-3044

Northwest Michigan R/C Club 744 Munson Ave., Traverse City, MI 49686; Jim Ovatt, (616) 947-6670

R&L Hobbies & Racing, 9782 Portage Rd., Kalamazoo, MI 49002; Rex Simpson, (616) 323-3686; fax (616) 329-1744

Rodgers R/C Raceway, 7463 Ridge Rd., Britton, MI 49229; George Rodgers, (517) 451-8301

Thumb Raceway, 3441 Main St., Marlette, MI 48453; Jim Wilson, (517) 635-7848

UCLA Hobbies, 2190 Clear Lake Rd., West Branch, MI; Bob Ruzanski, (517) 345-8018; fax (517) 345-8018

USA Raceways, 6083 Dixie Hwy., Bridgeport, MI 48722; Dave Killingsworth, (517) 777-7USA

Vicksburg Off-Road R/C Raceway, 50201 Silver St., Vicksburg, MI 49097; Jeff Schroeder, (616) 375-8591

Village Hobbies-n-Crafts, 195 N. Elm, Hesperia, MI 49421; Alan or Fran, (616) 854-1374

Village R/C Raceway, Prairie Ronde St., Decatur, MI 49045; Chuck Nolke, (616) 423-7878

West Michigan R/C Racers Club, 814 E. Railroad St., Hastings, MI 49058; Doug, (616) 948-2287 or Pat, (616) 945-3873

Westside R/C Raceway, 4335 Lake Michigan Dr., Grand Rapids, MI 49504; George Orlikowski, (616) 791-9902 (Open May through December)

MINNESOTA

Duey's Hobbies & R/C Raceway, 6600 Cahill Ave., Inver Grove Heights, MN 55076; Duey Carlson, (612) 450-1721

Grand Rapids R/C Speedway, 2209 Hwy 2 East, Grand Rapids, MN 55744; Aaron Voges, (218) 326-6751

Greater Minnesota Racin' Place, 3302 Southway Dr., St. Cloud, MN 56301; Jon Jackson, (320) 252-9768

J's R/C Raceways, Rte. 2, Box 266, Starbuck, MN 56381; Jay Campbell, (320) 239-4827

Minn-E-Golf & Hobby, 9100 Park Ave., Elk River, MN 55330; (612) 441-8365

Stormer Raceway & Slot Motorplex, P.O. Box 126 Hwy. 2 East, Glasgow, MT 59230; (406) 228-4569

Wilson's R.C. Speedway, 204 Southwest Dr., Kennett, MO 63857; Keith Wilson (573) 888-9223

Wilson's R.C. Speedway, 204 Southwest Dr., Kennett, MO 63857; Keith Wilson (573) 888-9223

Paul Bunyan Raceway, Rte. 1, Box 468, Bemidji, MN 56664; Brad Trask, (218) 243-2749

Ray's Raceway Park, 105 3rd Ave. NE, Glenwood, MN 56334; Dan Winter, (320) 634-5246

R/C Racing World, 235 Main Ave. North, Harmony, MN 55904; Mark McKay, (507) 886-5931 or (507) 886-2224

Southside Speedway, 2241 Marion Rd. SE, Rochester, MN 55904; Kevin Guy, (507) 281-3233

Time R/C Raceway, 20 West Lake St., Chisholm, MA 55719; RV, (218) 254-4321

Trackside Racing, 443 8th Ave. NW, New Brighton, MN 55112; Winton Offelie, (612) 633-2112

Wild West R/C Speedway, 2822 Piedmont Ave., Duluth, MN 55811; Roger Deloach, (218) 727-6248

MISSISSIPPI

Fast Freddy's Raceway, 20390 Hwy. 49, Saucier, MS 39574; Mark Payne, (601) 832-0315

Joe McFaden Hobbies, 1619 51st Ave., Meridian, MS 39307; Joe McFaden, (601) 483-7000

Small Cars Unlimited, 820 Cooper Rd., Jackson, MS 39212; (601) 372-5147

MISSOURI

All Seasons Hobby, 152 O'Fallon Plaza, O'Fallon, MO 63366; Bob Daniels, (314) 281-8767

B&L Hobbies & Raceway, 2800 Anchor Dr., Park Hills, MO 63061; Bob Marler, (573) 431-9444

Blue Vue Speedway, 12019 E. 47th St., Kansas City, MO 64133; Mark Randol, (816) 358-0238

Columbia R/C Trax, 1502 W. Bus Loop 70 (Exit 125), Columbia, MO 65202; Gary Phillippe, (573) 682-3993

Fire Mountain Raceway, 8647 Commercial Blvd., Pevely, MO 63070; Dan Gordon, (314) 475-6449

Greentree R/C Racepark, St. Louis Dirt Burners R/C Club, Marshall Rd., Kirkwood, MO; (314) 831-2194

Ozark Mountain Speedway, Rt. #2 Box 50, H-Highway and County Rd. 31, Noel, MO 64854; Clayton Younker, (417) 475-6222

Ozarks R/C Raceway, Hwy 13N, Brighton, MO 65781; Gene Rhodes or Ron Hawkins, (417) 742-4376 or (417) 742-7223

North Missouri Raceway, 223 Graves St., Chillicothe, MO; Billy Johnston, (816) 646-1120

RealBlue Vue Speedway, 24204 State Rt. 58, Pleasant Hill, MO 64080; Steve Hale, (816) 540-5584

Wilson's R.C. Speedway, 204 Southwest Dr., Kennett, MO 63857; Keith Wilson (573) 888-9223

MONTANA

Stormer Raceway & Slot Motorplex, P.O. Box 126 Hwy. 2 East, Glasgow, MT 59230; (406) 228-4569

NEBRASKA

Goodyear Superspeedway and Off-Road, 4021 North 56th, Lincoln, NE 68510; Tom or Bob, (402) 464-5000

Mr. Bill's, 450 West 2nd St., Hastings, NE 68901; Bill J. Ries, (402) 462-4865

O.N.R.O.A.D., 3307 N. 58 St., Omaha, NE 68104; Cook Jacobs, (402) 556-8674

RC Motorsport Off-Road Raceway, 5600 Mass Rd., Papillion (Omaha), NE 68133; Marty Stepanek, (402) 593-6133

Salvation Army South Corps, 4032 Harrison St., Omaha, NE 68164; James Frye, (402) 734-3414; fax (402) 734-3415

Siouxland R/C Car Association, 1800 Dakota Ave., South Sioux City, NE 68776; Jeff, (402) 494-1525

Winners' Circle, 3368 N. 88th Plaza, Omaha, NE 68164; Robert Conner, (402) 571-1821

NEVADA

Dansey's Indoor R/C & Hobbies, 741 N. Nellis, Las Vegas, NV; David Lugo, (702) 453-RACE

Silver State RC Club, 400 South Saliman #33, Carson City, NV 89701; Michael Geist, (702) 884-0375

Western R/C Raceway, 6404 Richmar, Las Vegas, NV 89139; Randy Grigg, (702) 260-9222

NEW HAMPSHIRE

Axis Racing R/C Dragway, 4197 High St., Hampton, NH; Dan Peterson, (603) 926-5211

Economy R/C Speedway, 4 Maple St., Winchester, NH 03470; Harold Thomas, (603) 239-4482 or 239-6470

Open Season Sports Center, Rt. 302, Lisbon Rd., Lisbon, NH 03585; Joseph Wiggitt, (603) 838-6602

Robert's Railroad & Hobbies, 1335 1st NH Turnpike—Rt. 4, Northwood, NH 03261; Robert M. Jeffers, Jr., (603) 942-7659

RT 106 Racepark, 743 Clough Mill Rd., Pembroke, NH 03275; Douglas Graves, (603) 224-RACE

NEW JERSEY

America's Hobby Center Inc., 18300 Tonnelle Ave., North Bergen, NJ 07047; John Many, (201) 662-0777

Ray's American Raceway, 142 Wilson Ave., Englishtown, NJ 07726; Ray Whitehead, (908) 446-3737

Family Hobbies Raceway, 3576 N.W. Blvd. & Weymouth Rd., Vineland, NJ 08360; Linda Vogel, (609) 696-5790

Golden Hobbies Raceway, 415 Erial Rd., Pine Hill, NJ 08021; John or Iona Golden, (609) 782-1222

Jefferson Speedway, 5494 Berkshire Valley Rd., Oak Ridge, NJ 07438; (201) 697-7525

Jerry's Hobby Center & Raceway, 336 Rt. 22W, Greenbrook, NJ 08812; Jerry or Gary, (908) 752-6030

LBRA Track, 392 Warburton Pl., Long Branch, NJ 07740; (908) 222-5122

Millville R/C Oval, 114 N. High St., Millville, NJ 08332; William Denstoz, (609) 327-4640


Pit Stop Dragway, 100 Campus Rd., Totowa, NJ 07512; Kimberly Frank, (201) 956-7223


On Trax Hobbies, 1549 Rte. 70, Browns Mills, NJ 08015; Joseph DiGirolamo, (609) 735-0422


R/C Shag Arena, 690 Jendi Pkwy., Totowa, NJ 07512; Amber Beggell, (201) 956-7223


South Jersey Cost Controlled Racing, 25 Jackson Lane, Sicklerville, NJ 08081; Ray Murray, (609) 629-4809


The Race Place, 1151 Hwy. 33, Farmingdale, NY 07731; John Fary, (908) 938-5215


NEW MEXICO

Meerschmidt R/C Raceway Park, Meerschmidt Recreation Center, Walnut and Hadley by BMX, Las Cruces, NM 88005; Robert Heinsen, (505) 526-6856 or Jim Meerschmidt, (505) 523-2995; email MEERSCH@aol.com


NEW YORK

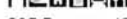
BarnStormers, MD #1 Old Oxford Rd., Chester, NY 10918; Lou, (914) 469-8206

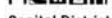

Beach Hill Speedway, 1760 Beach Hill Rd., Watkins Glen, NY 14891; Jim Riley, (607) 535-2616


Brian's Off-Road Track, 1124 N. Forest, Williamsville, NY 14221; Brian Was., (716) 633-8155


Brockport Speedway, 6000 Sweden Walker Rd., Brockport, NY 14420; Gil & Betty Glidden, (716) 637-6224


Brownie's Pro & Sport Hobbies, 124 Bennett St., Staten Island, NY 10302-1426; John Brown, (718) 727-2194


BSK Hobbies & Raceway, 120 Main St., Hornell, NY 14843; Bruce Harris, (607) 324-4011, (800) 603-0197.


C&D Raceway, 12542 NYS Rte. 12E, Chaumont, NY 13622; Chris or Don Bourquin, (315) 649-5403


Capital District R/C Racers, 27 Venus Dr., Albany, NY 12205; Keith Green, (518) 783-8036


Chipmunk Hill R/C Speedway, 217 Pine St., Theresa, NY 13691; Ted or Pete House, (315) 628-5065

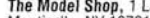

Frogtown Hobbies, Rt. 37, Mini Pines Village, Hogsburg, NY 13655; Dennis White, (518) 358-3686


Hal's Hobby Shop, 120 Cayuga St., Fulton, NY 13069; Hal & April Halstead, (315) 598-2772

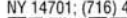

Hobby Images R/C Raceway, 89 Jerusalem Ave., Hicksville, NY 11801; Chris LaRussa, (516) 822-8259


Jerry's Raceway, 111 S. Applegate Rd., Ithaca, NY 14850; Jerry and Lori Achilles, (607) 277-0940


LI 1/4-Scale Racers, 63 Horton Dr., Huntington Station, NY 11746; (516) 351-5384


Long Island Raceway, 168 Broad Hollow, Farmingdale, NY 11735; James, (516) 845-7223


The Model Shop, 1 Lakewood Ave., Monticello, NY 12701; Richard Ciminoi, (914) 791-6075


Performance Plus Radio Control Speedway/The Hobby House, 1141 1/2 Jones & Gifford Ave., Jamestown, NY 14701; (716) 488-1772


P.R.O. Speedway, 5 Washington St., Cattaraugus, NY 14719; Marc Pritchard, (716) 257-3101


Radio Hill Raceway, 1219 Shannon Corners Rd., Dundee, NY 14837; Bill Brewer, (607) 243-8641


Rampage R/C, 27 Fuller Lane, Hyde Park, NY 12538; Brian Walker, (914) 229-1379; (914) 229-2456


R/C Competition Corner, 2413 Brewerton Rd., Mattydale, NY 13211; Lori and Cos Ciriello, (315) 455-8718


R/C Sport Hobby, 69-57 Juniper Blvd., South, Middle Village, NY 11379


R&S Hobbies, 356 Macedon Ct. Rd., Fairport, NY 14502; (716) 425-3722


Ringwood Junction, 1922 Dryden Rd., Freeville, NY 13068; Steve Miller, (607) 347-4198


Schoharie Co. R/C Car Club, P.O. Box 126, Cobleskill, NY 12043; (518) 922-6982


Southern Tier Raceway, 88 Paige St., Owego, NY 13827; Anita Harding, (607) 687-5395


South Shore Hobby & Raceway, W. Roe Blvd., Patchogue, NY 11772; Don Hauck, (516) 758-5567


Tri County Remote Control Car Club, 33 West Decker St., Johnstown, NY 12095; Jim Sprouse, (518) 762-8884


Tri-state Area Radio Control Model Auto Club (TARMAC), 28/30 Mountain View Rd., Poughkeepsie, NY 12603; Todd, (914) 342-5409; tracksite (914) 454-8276


Walt's Hobby, 2 Dwight Park Dr., Syracuse, NY 13209; (315) 453-2291


Westfield R.C. Speedway, 27 Clark St., Westfield, NY 14787; John or Jared Lindstrom, (716) 326-2339


Whitestone, 30-56 Whitestone Expy. (Dept. of Motor Vehicles), Flushing, NY 11374; Rudolf Ardilla, (718) 966-6155


ZOAR Road Speedway, 15318 Armes Ct., Gowanda, NY 14070; David & Gordon Ackler, (716) 532-9463


NORTH CAROLINA

A&J R/C Models, 2051 Anthony Rd., Burlington, NC 27215; Jerry Loe or Andrea Thompson, (910) 227-4556; fax (910) 227-1001


Another Zito's Mobile MASCARR Inc., 412 E. Blume St., Landis, NC 28088; Carmen Esposito or Pat Youngerman, (704) 451-3293


The Antique Barn, 2810 Forest Hills Rd., Wilson, NC 27893; Steve Seidlinger, (919) 237-6778


Atlantic Coast R.C., 8-A Lockhead Ct., Greensboro, NC 27409; Charlie Higgins or Harry Johnson (910) 664-1277


Badin Shore Raceway, 1730 Jackson Lake Rd., High Point, NC 27263; Jimmy or Tim Martin, fax (910) 431-6407


C/C Hobby Speedway, 8358 U.S. Hwy. 220 Bus. N., Randleman, NC 27317; Steve & Mary Cox, (910) 495-3482


C&H Raceway, 1400 N. Cannon Blvd., Kannapolis, NC 28083; Camera & Hobby Shop, (704) 933-5321


Cape Fear Speedway, 207 Harley Rd., Wilmington, NC 28401; Bob Justice, (910) 452-2354


Carolina Dragway, 907-D Warsaw Rd., Clinton, NC 28328; (910) 592-4569


Chatham R/C Raceway, 326 Reno Sharpe Store Rd., Bear Creek, NC 27207; Dwight Fields, (919) 898-2991


Hobby Club R/C Raceway, 1241 Buck Jones Rd., Raleigh, NC 27606; Hobby Club, (919) 460-8838


King R/C & Super Speedway, 143 Industrial Dr., P.O. Box 897, King, NC 27021; Chris Smith, (910) 983-5598 or (910) 883-3969


Ride & Slide R/C Raceway, 5319 Yacklin Rd., Fayetteville, NC 28303; Jim Woodman, (910) 425-5276 or Bill Culbertson, (910) 867-4202


R&J Off-Road Racing, 6172 Blalock Rd., Lucama, NC 27851; Robert Williams, (919) 239-0853 or Jonathan Jenkins, (919) 746-2703


Radio Jockey's Parkway, "RJ's," Rt. 9, Box 651, Fay, NC 28301; Tony Starling, (910) 486-4820


Rosewood R/C Speedway, 651 Community Dr., Goldsboro, NC 27530; Glenn Elam, (919) 731-4734


Southern RC Motorsports Club, Hwy. 17S., Shallotte, NC 28459; P.O. Box 1651; Mark Whitt, (910) 754-4902 or Eddie Ferster, (910) 754-8528


Ultratrax, 5505 Palmers Branch, Leland, NC 28451; Mike Williams, (910) 313-0350


NORTH DAKOTA

Hacienda Hills Speedway, 20 Hacienda Hills, Minot, ND 58701; Kenny Duchscherer, (701) 839-4419


Northern Mini Racers, P.O. Box 415, Minot, ND 58702; Roger Lee, (701) 839-5294


Surrey International Raceway, RR 1, Box 37, Norwich, ND 58768; Marlen Lenton, (701) 728-6760


OHIO

Aerotech Raceway, 409 Applegate Rd., North Canton, OH 44720; (330) 499-1300

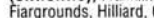

Canton R/C Raceway, 2206 13th St. NE, Canton, OH 44705; Dan Mauger, (330) 833-3091


Classic Hobbies, 1994 E. Waterloo Rd., Akron, OH 44312; Walt Ellis, (216) 733-6400


CR Raceways Emporium, 323 Center St., Ashtabula, OH 44004; Virginia Gagat, (216) 992-3833


CORCAR/Sams Club, 128 Amity Rd., Galloway, OH 43119-8732; Bill Stevenson, (614) 870-7159


Columbus R/C Racing Club (C.R.C.R.C.), Franklin County Fairgrounds, Hilliard, OH 43026; Jeff Crowell, (614) 236-1783


D&D Hobby Center, 1344 Lexington Ave., Mansfield, OH 44907; Eric Radio, (419) 756-9771


D&J R/C Raceway, 801 W. Market St., Orrville, OH 44667; Don Yoder or Mark Nussbaum, (330) 682-4266


Fun for All Raceway, 675 College Dr., Batavia, OH 45103; Steve Donaldson, (513) 732-0440


Greentown R/C Raceway, 3353 Perrydale, Greentown, OH 44630; Chuck Lambert, (330) 364-6585


Hobby Shop Raceway, 2096 Miami Blvd., Centerville, OH 45459; The Hobby Shop, (937) 436-6161


Hobby World, 3499 SR 59, Ravenna, OH 44266; Tom Fry, fax (330) 296-0894


Lafferty R/C Raceway, Box 153, 7022 Hurrah St., Lafferty, OH 43951; Chris Christman, (614) 968-4818


Lakes Hobbies, 3425 Manchester Rd., Akron, OH 44314; Roy Spencer, (330) 645-6912


Medina R/C Raceway, 754 N. Court St., Medina, OH 44256; Bill Aholt, (216) 723-0255


Mid American Raceway, 13150 Airport Hwy., Swanton, OH 43558; Bill or Chuck, (419) 475-9459


Performance R/C Club of Ohio, 2206 13th St. NE, Canton, OH 44705; Greg Ledbetter, (216) 453-7089


Scouters Hobby Hut, 234 Robbins Ave., #D, Niles, OH 44446; Dave "Scouter" Evans, (216) 544-9411


TARCAR, 7216 Nebraska Ave., Toledo, OH 43617; Bill Bridges, (419) 826-3859


Tri-State R/C Auto Racers, Joyce Park, Hamilton, OH; Ernie Bauhoffer, (513) 528-2052


Van Wert R/C Raceway, 144 E. Main St. (above Hoveman Music), Van Wert, OH 45891; Mark Davis, (419) 232-2112

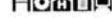

Y-City Hobby & Speedway, 120 S. 6th St., Zanesville, OH 43701; Kevin McKenna, (614) 455-3025


OKLAHOMA

Adams Creek R/C Speedway, 5207 S. 194th E. Ave., Broken Arrow, OK 74014; John Beighle, (918) 355-1416


Competition R/C, 100 SE 89th, Oklahoma City, OK 73149; James or Louise Brown, (405) 634-0809


Coweta Hobby & Speedway, 310 S. Broadway, Coweta, OK 74429; Derald Seabolt, (918) 486-3948


R/C Speedway, 1401 N. Vanburan, Enid, OK 73701; Sean or Jessica Hillery, (405) 237-5504


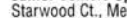
Remote Control Race Course, 400 S. Vermont Ave., Ste. 104, Oklahoma City, OK 73108; Rick or Steve, (405) 947-RACE


Wild Country Speedway, 127 South Main, Porter, OK 74454; Charles McCollough, (918) 685-0372 or (918) 687-1686


OREFON

Competition Racing Association, 17941 NE Gleason, Portland, OR 97230; Mark Taylor, (503) 761-1334


D.I.R.T. (Diamond International Race Track), 65540 73rd St., Bend, OR 97701; Daleyne and Edward Gleitz, (541) 388-2932


Junior Vehicle Speedways, 3090 Starwood Ct., Medford, OR 97501; (541) 779-3090


Pit Stop Hobby, 634 N. Coast Hwy., Newport, OR 97365; Richard Wood, (541) 265-2825


R/C Craze Speedway, 300 Ashland Lane, Ashland, OR 97520; Shawn Lazareff, (541) 482-4786


R/C Plus Hobbies Raceway, 1857 25th St. SE, Salem, OR 97302; Ron Smith, (503) 364-9188


R/C Speed Center, 2810 N. Pacific Hwy., Medford, OR 97501; Gene and Betty Jean Skelton, (541) 779-8298


Yamhill County R/C Car Club, 722 Morgan Ln., McMinnville, OR 97128; Larry Rucker, (503) 472-7234


PENNSYLVANIA

A&D's Bumps & Jumps, RR7, Box 7395C, Stroudsburg, PA 18360; Dan Ambrosio, (717) 424-1750


A&E Raceway, Latrobe 30 Plz., Latrobe, PA 15650; Bruce Parker, (412) 539-7130


Bachman's Speedway & Hobbies, Box 306, Effort, PA 18330-0306; Jeffrey Bachman, (610) 681-5845


Benders Junction Speedway, 2300 Benders Dr., Bath, PA 18014; Gerald Wambold Jr., (610) 759-0161


Brookville Hobby Shop, 170 Main St., Brookville, PA 15825; Mark Tonell, (814) 849-7385


CEB Motors R/C Div., 5743 Molly Pitcher Hwy., Marion, PA 17235; Charlie Boozie, (717) 375-4635


Columbia Racing Association, 128 N. Front St., Philipsburg, PA 16866; Lurch Hamkal, (814) 342-7114


Cooks Way

The Mushroom Bowl, 960 W. Cypress St., Kennett Square, PA 19348; Bruce or Drew, (610) 444-1850

Pinion Twisters, 3M Plant, Green Ln. and Mitchell, Bristol, PA; Mark, (215) 632-2344 or Tony, (215) 742-3560

Pit Stop Hobbies, 262 W. Main St., Mount Joy, PA 17552; James Stoudt Jr., (717) 653-6222

Prop & Wheels Raceway, 139 W. Broad St., Tamaqua, PA 18252; Gil Walters, Prop & Wheels Hobbies, (717) 668-2288

The Raceway at River Junction, 1216 4th St. (behind cemetery), Beaver, PA 15009; (412) 728-5571

RC Outfitters RCO Raceway 519 Broadway, Hanover, PA 17331; Chris Shaffer, (717) 633-9490

R/C Pro Speedway, Millville Rd., Bloomsburg, PA 17815; John Swisher, (717) 387-0266; fax (717) 387-4937

R/C Pro III, 910 Chestnut St., Coal Twp. (Shamokin), Shamokin, PA 17866; John Swisher, (717) 648-7763

Riverside Raceway, PA Ave. W & Hickory, Warren, PA 16365; Jeff, (814) 723-4211

S.A. Hi Banks, Hahn's Dairy Rd., Palmerton, PA 18071; Scott Andrews, (610) 826-4583

Sinking Spring Race Center, 237 South Hill St., Sinking Spring, PA 19608; Randy Gelsinger, (610) 670-0760

Staub Bros. R/C Speedway, 31 Locust St., Gettysburg, PA 17325; Todd or Scott Staub, (717) 334-5445

TnT Raceway, Randolph Rd., Great Bend, PA 18821; Frenchie, (607) 775-1750 or Ed Kraft, (717) 967-2604

Trains & Lanes Raceway, 3825 Northwood Ave., Easton, PA 18045; Jeff Setzer, (610) 253-8850; (800) 447-4891

Willow Mill Speedway, 37 N. Season's Dr., Dillsburg, PA 17019; George Verbovitz, (717) 432-4445

Willow Run R/C Raceway, 135 Wright St., Corry, PA 16047; Jim Small, (814) 664-8147

World A.T.L.A.S./P.A.R.C.E. R/C Raceway Hobby Shop & R/C Club, Chester Exchange Mall, 10th & Morton St., Chester, PA 19013; Darrell, Lee or Marc, (610) 874-2540

PUERTO RICO

Cindra R/C Track, Carr 7787 KM 1.6, Bo Beatriz Adentro, Cidra, Puerto Rico 00739; Humberto (Tito) Lizardi, (787) 739-1532

Dorado Offroad R/C Track, Pista Atletica Bo. Higüillar, Dorado, Puerto Rico 00646; Roberto Lamoso/Jaime Ramos, (809) 796-5603 or (809) 796-1734

Hacienda Muñoz R/C Track, Carr. #14, Juana Diaz, PR 00795; (809) 837-7083

RHODE ISLAND

SK Hobbies Inc., 15 Carl St., Johnston, RI 02919; Slim or Keith, (401) 453-1440

Tri-State R/C Raceway, 205 Hallene Rd., Warwick, RI 02886; Raymond Dean, (401) 738-4908

SOUTH CAROLINA

Extreme R/C Raceway, 5976 Grace Lane, Myrtle Beach, SC 29577; Kevin Bullock, (803) 236-2083

The Grove Racing Center, 939 S. Anderson Rd., Rockhill, SC 29730; Mike Durham or Don Faris, (803) 327-4121

Hobbies and More, 1570 S. Main St., Darlington, SC 29532; Jerry Pollard, (803) 393-0355

J&M R/C Hobbies, 5341 Dorchester Rd., Evanston Plaza, N. Charleston, SC 29418; Mike Smith, (803) 552-9449

ORA Atomic Racing Facility, 373 Boyd Pond Rd., Aiken, SC 29803; Bill Jackson, (706) 855-0846 or (803) 642-0314

World Hobbies, 707 Sulphur Springs Rd., Greenville, SC 29617; Bob Pittman, (864) 246-4702

SOUTH DAKOTA

Action R/C Raceway, 107 N. Main, Mitchell, SD 57301; (605) 996-6895

Boomerangs Raceway, 105 N. Main, Hartford, SD 57033; Ed Smithback, (605) 528-7345

Dakota Off-Road Racers, 2989 W. Br. Co. 12, Aberdeen, SD 57401; (605) 226-0604

Goldtrax Raceway, 409 E. High, Lead, SD 57754; Steve Brown, (605) 584-2355

K&B Speedway, 27283 SD Hwy. #115, Harrisburg, SD 57032; Mike Kosetin, (605) 743-2582

R/C Action Raceway, SE Corner at 484th & Hwy. 38, Sioux Falls, SD 57105; Brian Cox, (605) 373-0511

TENNESSEE

D&M's Downtown Raceway, 2703 U.S. Hwy. 411S, Maryville, TN 37303; (423) 681-8919

Hillside R/C Raceway, 4194 Oakhill Rd., Dayton, TN 37321; John and Rusty Tipton, (423) 775-4739

Lawson Raceway, 152 Joel Rd., Oliver Springs, TN 37840; Anthony Lawson, (206) 815-0379

Machine-Head Straits, 938 Grandmere Rd., Lawrenceburg, TN 38464; Larry and Eliane Sanders, (615) 762-6630

MSA R/C Racing, Rt. 12 Box 489 B, Crossville, TN 38555; D.R. Findley, (615) 456-0027

Sparta Raceway Park, 32 N. Main St., Sparta, TN 38583; Carl (Buddy) Elrod, Rt. 5 Box #652, Sparta, TN 38583; (615) 836-8450 or (615) 761-3407

TnT Raceway, 643 Loop Hollow Rd., New Tazewell, TN 37825; Cliff Swett, (423) 626-9065 or (423) 869-8942

W.O.W. Raceway, 59 Luray Rd., Beech Bluff, TN 38313; Kelly Bean, (901) 427-7874; email: windx60@pipeline.com

TEXAS

Big Mike's R/C Raceway, 1405 W. Cotton St. (behind the Locker Room), Longview, TX 75604; (903) 297-7814

Command Hobbies, 6929 Airport Ste. 146, Austin, TX 78752; Tony Bermudez, (512) 458-2324

Drycreek Raceway, 5903 Co. Road 2297, Ouilan, TX 75474; Micky Alphin, (903) 883-4060

Eastex Raceway, 45000 Hwy. 59 N., New Caney, TX 77357; Brent Mahaffy, (713) 399-9777

El Paso Raceway, 301 Edith Drivel, El Paso, TX 79924; Hector Gonzalez, fax (915) 779-4524

Flip & Spin R/C, 5957 Jones Rd., Bryan, TX 77807; Garland Crabb, (409) 822-7311

Hal's Hobby Raceway, 1440 Bessemer, El Paso, TX 79936; (915) 591-2213

The Hobby Center Raceway, 4104 Stan Schlueter Loop, Ste. 1, Killeen, TX 76543; Lawrence Remick, (817) 690-7311

Hobbycraft Speedway, 819 N. Main St., Corsicana, TX 75110; Keith Hoffman, (903) 872-6761

Hobbytown USA, 7676 FM 1960 W., Houston, TX 77070; Fred Pfafman, (713) 955-7097

Hobbytown USA, 999 E. Basse Rd., Suite 177, San Antonio, TX 78209; Joe Sena or Clark Baisdon, (210) 829-8697; fax (210) 829-8707

Indy R/C World, 220 Saturn Rd., Garland, TX 75041; Steve Webster, (214) 271-4844; fax (214) 271-4502

Keyser's Hobbies, 1643 Texas, College Station, TX 77840; Bill Bennett, (409) 693-8095

MBRC Off-Road Raceway, 204 D&E Valley Lane, Kennedale, TX 76133; (817) 292-5055

North Houston Speedway, 11847 Spears Rd., Houston, TX 77067; Bob or Carol Hillin, (713) 872-2471

North Texas 1/2 Scale Association, 3905 Sandia, Plano, TX 75023; Dean Densmore, (972) 519-0324

Performance Raceway, 1106C Witte Rd., Houston, TX 77055; Jorge Tabush or Terry Schmid, (713) 464-4458

Rick's R/C Raceway, 23B Scenic Loop, Boerne, TX 78000; Rick, (210) 981-2245 or Rich, (210) 590-1805

Rough Country, 905 Jacksboro Hwy., Wichita Falls, TX 76301-5310; Robert Kerr, (817) 322-2453

Star/Car Raceway, 5802 Patton St., Corpus Christi, TX 78415; Glen Stead, (512) 949-8525; Race Hotline, (512) 881-6105

T&T Eagle, 161 W. Spring Creek Pkwy., #601, Plano, TX 75023; Tony Welborn, (214) 517-0562

Texas Speedway, 6707 Chimney Rock, Bellaire, TX 77401

Tiger's Den R/C Speedway, 702 E. Broad St., Mansfield (DFW), TX 76063; Bob Burns, (817) 477-5513

T.O. Offroad Raceway, 6236 Quail, El Paso, TX 79924; Eren Saenz, (915) 821-7522

Triple Jays R/C Raceway, Rte. 4, Box 720, Allen, TX 75002; Jeffrey Jay Johnson, (972) 562-7967

Warehouse Radio Controlled Raceway, 612 W 4th St., Amarillo, TX 79101; Craig or Darren Waddell, (806) 374-6485

W.E.S. Hobby Race, 980 S. Fourth St., Beaumont, TX 77701; Edmond Richards, (409) 839-4929

Wild Bill's Raceway, 535 E. Shady Grove, Irving, TX 75060; Lynn Morgan or Tom Nix, (214) 438-9224

UTAH

Intermountain R/C Raceway, 8481 W. 2700 S., Magna, UT 84044; David Mott, (801) 250-8303

Payson R/C Raceway, 955 South Main, Payson, UT 84651; Gus Wood, (801) 224-3852 and Lasca Wood (801) 222-8677

WOR Raceway, 3170 Brinker Ave., Ogden, UT 84401; Brian Worton, (801) 393-2530

VERMONT

Barre Town R/C Club, 14 South Main St., Wall St. Complex, Barre, VT 05641; Russ Tribble or Pete Perreault, (802) 888-2860 or (802) 476-9458

Bradford R/C Racing, Main St., Bradford, VT 05033; Seth Bean, (802) 222-9674

Stoughton Pond Raceway, Stoughton Pond Rd., Perkinsville, VT 05151; Rick Adams, (802) 263-9321

VIRGINIA

Bob's Hobbies & Raceway, 7422 Brandywine Dr., Mechanicsville, VA 23111; Bob, (804) 746-2758

Brown Brothers Hobbies, 924 North Main Street, Dumfries, VA 22026; Joel or Bob Brown, (703) 221-5746

Cooper's R/C Race Center, 4000 Sago Rd. (969), Chatham, VA 24531; Norris Cooper, (804) 724-7342 or (804) 724-4182

Gloucester Scale Hobbies, 2352 George Washington Memorial Highway, Hayes Plaza, Hayes, VA 23072; Rob Thein, (804) 642-3484

Hobby Hangers Speedway, 14014 D Sullyfield Cir., Chantilly, VA 20151; Kwang or Billy, (703) 631-8820

The Hobby House, 116 Edds Ln., Sterling, VA 20165; Oppie, (703) 444-0333

KC's Radio Control & Repair, Rt. 4, Box 312, Trents Ferry Rd., Lynchburg, VA 24503; Curtis or Kim Wright, (804) 384-8596

Olde Towne Hobby Shoppe, 9105 Center St., Manassas, VA 22110; Arnie Levine, (703) 369-1197

Race World Hobbies, 6102 Lakeside Ave., Richmond, VA 23228; Larry Boyd, (804) 553-8040

Roadmasters/ Rick's Hobbies, 12201 Balls Ford Ave., Manassas, VA 22110; Rick, (703) 330-6833

Shamrock Raceway, P.O. Box 3739, Winchester, VA 22601; Kevin Allen, (540) 662-0403

Thunder Road RC Racing, P.O. Box 1022, Troy, VA 22974-1022; James Palmer, (804) 589-8174

Trackside Hobbies, 1920 E. Pembroke Ave., Hampton, VA 23663; Rick Cardwell, (757) 723-4170

Trainano R/C Racing, 5661 Shoulders Hill Rd., Suffolk, VA 23435; Frank Stevens, (757) 488-5454

WASHINGTON

Allie's, 108 South K St., Aberdeen, WA 98520; (360) 533-6638

A-Main Raceway, 14011 NE 3rd Ct., Vancouver, WA 98685; Monty Coleman, (360) 571-8404

Burien Toyota R/C, 15025 1st Ave. South, Seattle, WA 98148; Ray Meek, (800) 654-6456

C&C Raceway, 266 Lind Ave. NW, Renton, WA 98055; Charles Lakin, (206) 227-5167

Four Season R/C Racing, 2941 Sleater Kinney Rd. NE, Olympia, WA 98506; Gary and Sharon Brown, (360) 491-2430

Hale's R/C Raceway Park, 10611 136th St. E. Puyallup, WA 98374; Walt Hale, (206) 845-7675

Hannegan Speedway, 4212 Hannegan Rd., Bellingham, WA 98225; Dana Hogarth, (360) 734-4090

Raceway Hobbies, 188 Sunset Ave. S., Edmonds, WA 98020; Brian Bodine, (206) 774-3285

Schmidt's Auto Parts, 10305 Old Hwy. 99, Marysville, WA 98271; Jon Faila, (206) 653-8838

Spokane Indoor Raceway, 6422 E. 2nd Ave., Spokane, WA 99212; Dave Mapston, (509) 534-RACE

Tacoma R/C Raceway, 6305 6th Ave., Tacoma, WA 98406; Scott Brown, (206) 565-1935

Tearor Raceway, Fantasy World Toy and Hobby, 7901 S. Hosmer, Tacoma, WA 98408; Dave Kleinman, (206) 473-6223

Ultimate R/C Raceway, 907 Cole St. #3, Enumclaw, WA 98022; Dan Daugherty, (360) 802-2388

Zep's Hobbies & Raceway, 530 Interlake, Moses Lake, WA 98837; Steve Ralph, (509) 765-8191

WEST VIRGINIA

Burr-Fab Raceway, 90 Davis St., West Union, WV, 26456; Mark Travis, (304) 873-2487

Fulton's R/C Raceway, 2646 Chapline St., Wheeling, WV 26003; James Fulton, (304) 233-5355

Left Turn Hobbies, 100 Saco Ln. (by Post Office), Glen White, WV 25849; Stretch, (304) 255-3930

Race Zone, Hopewell Rd., Rt. 8, Box 343A, Fairmont, WV 26554; Joe Clutter (304) 368-1000

WVRC R/C Club, 142 West Main, Bridgeport, WV 26330; D.W. Weed

WISCONSIN

Bayland Hobbies, 951D Ashwaubenon, Green Bay, WI 54304; Dan or Jay Boettge, (414) 339-8288

Hobbytown USA, 2061 South Koeller, Oshkosh, WI 54901; Hobbytown USA, (414) 426-1840

JJ's Dirt Heaven Hobby and Raceway, 6028 County Road K, New Frankville, WI 54229; Jeff Jansen (920) 866-9096

A

Mid-West Tri-Clone, 3745 Shuster, West Bend, WI 53095; Tom Holz, (414) 334-0429

A

NARCAR Raceway, 4331 E. Wall St., Eagle River, WI 54521; Mary O'Brien, (715) 479-5154

A

Pro-Star Racing, 726 Pine St., Green Bay, WI 54301; Chuck, (414) 494-1233 or Terry, (414) 469-5566

A

S&N's Tracks Hobbies and Raceway, 6045 N. Green Bay Ave., Milwaukee, WI 53209; Scott Ernst, (414) 351-1910

A

WYOMING

Collectable Creations Off-Road Oval Track, 1790 Dell Range Blvd., Cheyenne, WY 82009; Phil Severson, (307) 632-2156

A

Wind River R/C Racing Association, 113 S. 3rd E., Riverton, WY 82501; Bob Belding, (307) 857-2068

A

Xtreme Hobbies Raceway, 2724 Powder Basin, Gillette, WY 82718; Krieg Balls, (307) 682-6077

A

ARGENTINA

Club A. Velez Sarsfield, Av. J.B. Justo 9000, C.P. 1408, Buenos Aires; Jorge Herrero, 54-01-658-5851

A

Club A. Velez Sarsfield, Av. J.B. Justo 9000, C.P. 1408, Buenos Aires; Jorge Herrero, 54-01-658-5851

A

AUSTRALIA

A.C.T. Model Car Racing Club, offroad track—Wanniasa Raceway, Hyland Place, Wanniasa A.C.T.; indoor track—Epic Complex, Northbourne Ave., Canberra North A.C.T.; Gary Davey, 61-6-2871411

A

Aubry R/C Car Club, Aubry Showgrounds, Aubry, NSW 2640; Ron Langman, 060-247-128

A

Canberra Off-Road Model Car Club, Goyder St., Narrabundah, ACT 2604; Graham Brown, 61-6-241-3070

A

Central Coast ORCC, EDSACC Sports Complex, Bateau bay, N.S.W. Australia 2261; Peter J. Knight, 61-43-693-698

A

Fast n' Fun, 250 Potreath Rd., Bellbrae West, Torquay, VIC 3228 Australia; Stephen Chara (613) 5266 1550 or (613) 5266 1556; fax (613) 5266 1556

A

Illawarra RCECC, Croome Sporting Complex, Albion Park Rail, NSW 2527; Mel or Andrew, 042-714-683

A

Lakeside R/C Racing Car Club, Hollywood Dr., Lansvale, NSW 2166; R. Bartolozzi, 62-2-907-9800

A

Melton Electric Circuit Car Association, Safeway Car Park, Corner High St. and Coburns Rd., Melton, VIC 3337; Arthur Joslin, 61-3-9747-8805

A

Northern Districts Model Rally Club, Inc., Rear Stanford Centre, 16 Stanford Way, Malaga, Western Australia 6066; G. Thirlwell, 61 (9) 249 3855; fax 61 (9) 249 4778; email tony@ois.com.au

A

Penfield Park, DSTO Complex Salisbury, Adelaide, South Australia 5108; Trevor Unsworth, (618) 8289-5010

A

Templestowe Flat Track Racers, Templestowe Reserve, Corner of Porter St. and Williamsons Rd., Templestowe, Melbourne, Victoria 31066; Renato Benci, 61 (3) 9553 4625

A

Wodonga R/C Car Club, 11 Murphy St., Wodonga, VIC 3690; Ron Langman, 61-60-247-128

A

BELGIUM

ATR-Alka-Tele-Racing, 3570 Stationstraat 21, Alken Limburg; 0032-11-25-49-03

A

Cartroubles Indoor Buggy Track, Jan Moonsstraat 52-56, 2160 Wommelgem, Belgium; Guy Ermes, 32-3-326-51-15; fax 32-3-326-51-01

A

MBV-Kampenhout, Teniersln 28, Kampenhout B1910, Belgium; Frank Mostrey, phone and fax 0-16-65-75-18

A

MRCZ, Centrum, De Burg, Belgium; Montie, 75-71-63

A

Model Racing Club Oudenaarde, Scheldekant, 9700 Oudenaarde, Belgium; A. Chanterle, 32-55-31-36-48; fax 32-55-30-19-12

A

R.C.R., Peilstraat 43, Retie 2470, Belgium; A. Eelen, phone and fax, 32-14-379685

A

BRAZIL

Amoc Cassociação de Modelismo B. Camborio, Junto ao Par Que Ecologico de Bal. Camborio, Bal. Camborio, S.C. 88.330-000; Leo Cesar, (047) 366-0001

A

Brasilia R/C Motor Circuit, Estacionamento do Estadio Mane Guarrincha, Brasilia, DF 70000, Brazil; Alexandre (Alex), 55-061-273-7205

A

Hobby Center, SOS.210 B.H. Apt. 204, Brasilia, DF-Brasil 70.273; 061-242-0488

A

Hobby Planet Racing Club, Rod Dom Pedro 1, KM 1315, Campinas, Sao Paulo, Brasil 13091901; Daniel, Helio, Luciano, 019 258 2768

A

Jungle Drive, Rua Alberto Maranhao, No. 219 Icha do Gov. Rio de Janeiro, 21940-490; Paulo Brito, (021) 396-0851 or (021) 393-7449

A

MP Raceway, AV. Nacoes Unidas, 6815 Lapa, Sao Paulo; Gerd Heitrotter, 55-11-9819039; www.hpraceway.com.br

A

Off Roaders, Av. Guillermo Dummont Villars, 317, Sao Paulo, CEP 05640; Waldir Ielpo, (055) 011-260-5628; fax (055) 011-831-4931

A

Way of R/C Off-Road Cerrado, Rua Paraiba 1323, 1st floor, Belo Horizonte, Minas Gerais; Claudio T. Corréa, (031) 227-6111, fax (031) 227-6869

A

CANADA

Action Weelz, 462 Turcotte, Vanier, Quebec, G1M 1R6; Regent Tardif, (418) 527-5756

A

Advance R/C Raceway, 4181 Sheppard Ave. E., Scarborough, Ontario M1S 1T3; Albert Lau, (446) 321-8377

A

A&J Toronto R/C Raceway, 24 Main St., Building B, Unionville, Ontario L3R 2E4; (905) 305-1479

A

The All New R.C. World, 2633 Hwy. #6, Mt. Hope, Hamilton, Ontario L0R 1W0; Dave, (905) 765-2301, Larry, (905) 333-3297 or Brian, (519) 752-0044

A

ATN, Auto Teleguide Nicolet, 2000 Rue Paul Hubert, Saint-Jean-Baptiste-de-Nicolet, Quebec J3T 1E5; Louis Durand, (819) 293-6097

A

Auto Sprint, 6065 Des Grands Prairies, St. Leonard, Quebec H3G 2R6; David Kalayian, (514) 287-3503

A

Circuit J.C., 1283 Chemin, St. Philippe, St. Polycarpe, Quebec J0P 1X0; Jean Castellon, (514) 267-7854

A

Circuit Pepsi, Centre de Location, 37 duRoi, Sorel, Quebec; (514) 746-8828

A

Circuit Plessis, 260 Rang 9 Ouest, Plessisville, Quebec G6L-2Y2; (819) 362-3743

A

Circuit R/C Pro, 1500 Chemin Sullivan, Val d'Or, Quebec; J9P 1M1; R/C Modeler Plus, (819) 874-3918

A

Circuit Teleguide St. Roch, 363-B St. Charles, St. Roch De L'Achigan, Quebec J0K 3H0; (514) 588-4254, fax (514) 588-6554

A

Circuit Teleguide Grand Prix, 9600 Ignace, Ste. C. brossard, Quebec J4Y 2R4; (514) 444-1286

A

Club Avatt, 244Jules-Richard, Deauville, Quebec J1N 3; Daniel Vanier, (819) 864-6262

A

Club RCSI, 44 Rue Holliday, Sept-Iles, Quebec G4R; Sylvio Gerard, (418) 968-6575; Hobby Shop, (418) 962-6565

A

CRCCC, Box 309, Clinton, Ontario NOM 1L0; Eric Russell, (519) 482-9429

A

CTG, 450 Chemin de la grand ligne, Granby, Quebec; (514) 358-4419

A

CTL, 495 Industriel, Longueuil, Quebec; (514) 358-4419

A

Dustkickers R/C Raceway, 1785 Cypress Rd., Quesnel, British Columbia V2J 4B1; Darrell Dinsdale, (250) 747-2680

A

Dynamic Hobbies, 21 Concourse Gate, Unit 6, Nepean, Ontario, K2E7S4; Clark Freeman, (613) 225-9634

A

East Coast Model Center Raceway, 13 Glen Stewart Dr., Ste 1, Southport, Prince Edward Island C1A 8X9; Gary Stephen, (902) 569-3262

A

Evolution Speedway, 1935 Glengrove Rd., Pickering, Ontario L1V 1X3; Eric Lang, (905) 839-2084

A

Fast-Trax Speedway, RR 4, Trenton, Ontario; Russ McPeak, (613) 394-6411

A

Fly'n Bryan's Radical Raceway & Little Shop of Hobbies, RR #1, Ste. 12, Comp. 49, Chase, British Columbia, Canada V0E 1M0; Bryan Coffey/ Dani Potvin, (604) 955-0669

A

Honda House Motor Speedway, 384 Richmond St., Chatham, Ontario N7M 1P9; John Elliot, (519) 354-5530

A

Interior R/C Raceway, 34-1605 Summit Dr., Kamloops, BC, V2E 2A5; Martin Vannieuwenhuizen, (604) 374-1268 or (604) 374-8458

A

J-T International Raceway, 127 Milligan Lane, Nanapan, Ontario K7R 8A1; N. O'Neill, (613) 354-0099

A

Leading Edge R/C Speedway, 731 Gardiners Rd., Kingston, Ontario K7M 3Y5, Canada; Mike and Tony Daicar, (613) 389-4878

A

Mid-Canada R/C Speedway, 1678 St. James St., Winnipeg, Manitoba R3H 0L3; Richard Driedger, (204) 339-6566

A

Minatures & Passions, 204 St. Charles, #103, Ste. Therese, Quebec, Canada J7E 2 B4; Gilles Lachance, (514) 979-7989

A

MORRAC Raceway, 6449 Crowchild Tr. SW., Box 36060, Calgary, Alberta T3E 7C8; (403) 254-1386

A

Off-Road R/C Raceway, 76 Eddystone Ave., North York, Ontario M3N-1H4; Ron Lefebvre, (416) 740-0536

A

Prince George Radio Controlled Car Club, 202 Explorer Cres., Prince George, B.C. Y2M5R8; Doug Waller, (604) 561-0035

A

Quintrax Speedway, 610 Dundas St. East, Belleville, Ontario K7K 2M1; (613) 962-1414; fax (613) 962-7306

A

Randy Shantz Raceway, 1015 W. 14th St., North Vancouver, British Columbia; Steve Mulhall, (604) 945-3888

A

R/C Champ Raceway, 670 Progress Ave., Rear Unit #13-16, Scarborough, Ontario, M1H 3A4; Ben, Matthew or Louie (416) 289-8717

A

Recreation R/C Raceway, Hwy 16 and Ferry Ave., Prince George, BC; Doug Waller, (604) 561-0035

A

Ronbo's R/C Racing, RR 1 Glen Walter, Cornwall, Ontario K6H 3G4; Ron Giroux, (613) 936-0176

A

Rousillon Hobby Track, 177-D St-Jean Baptiste, Chateauguay, Quebec J6K 3B4; (514) 698-2151

A

Sheldon's Raceway, Box 597, Cutknife, Saskatchewan; Sheldon Bradlow, 398-2232

A

Spinnin Wheel Raceway, RR 1, Ariss, Ontario N0B 1B0; (519) 824-1614

A

South Okanagan Roadhogs, Skha Lake Rd., Penticton, BC; Willie Lemm, (604) 492-5698

A

Steeltown Speedway, 3580 Kirk Road West, Binbrook, Ontario L0R 1C0; Paul Snyder, (905) 227-7508

A

Strathclair Park, Old Garden River Rd., Sault Ste. Marie, Ontario P6A 5T1; (705) 759-1855

A

Sudbury Organized Auto Racing, 765 Barrydowne Rd., Sudbury, Ontario P3A 3T6; Ken Moore, (705) 524-5339

A

Thunder Alley Raceway, Lambton Mall, 1380 London Rd., Sarnia, Ontario N7S 1P8; Rob Smith, (519) 882-3361

A

Vancouver R/C Road Racers, #100-2733 Barney Hwy., Coquitlam, British Columbia V3E1K9; Roger Brown, (604) 945-3888

A

COLOMBIA

Club De Automodelismo Colombiano, Centro Recreativo Cafam, Kilometro 14 Autopista Norte, Santafe De Bogota, D.C. Colombia; Jorge Delgado, 1-6130588

A

Club De Automodelismo Colombiano, Centro Comercial Guaymaral, Kilometro 16 Autopista Norte, Santafe De Bogota, D.C. Colombia; Jorge Delgado, 1-6130588

A

Garoso Raceway, Avenida Libertadores con Diagonal Gran Colombia, Cucuta, Colombia; Gabriel Rodriguez, 975-751892

A

CYPRUS

Racing Model Club, Kennedy Ave. N. 42, Nicosia, Cyprus; Andrea Sotiriou, 493186; fax 493229

A

DENMARK

Brondby Motor Club, Roskildevej 460 Brondby, Denmark 2605; Soren Boy Holst, 45-36-472-462

A

Holstebro R/C Buggy Club, Mozartsvej 7500 Holstebro, Denmark 2600; Michael Brusholt, 45-97-412-734

A

Klub 144 Raceway, Bagsvaerdvej 144A, 2800 Lyngby, Denmark; Henrik Carstens, 45-42-88-3691

A

Rainbow Raceway, Eriksvej, 9 Glostrup, Copenhagen 2600; P. Christiansen, 45-52-848-504

A

Thor Minirace Odense, Sohussvej 255, Allesø, Odense, Behind Alesso Hallen (Sport Center), Odense, Denmark; Ulrich Rasmussen, 45-65-303-707

A

DOMINICAN REP.

Adoca R/C Speedway, Feria Ganadera, Santo Domingo; (809) 220-5266

A

GREECE

EORA-Fanatix Racing, 20 Irinis Ave., Pefki, Athens 15121; Mr. T. Diamandakis, 8025556



GUAM

R/C International Raceway, P.O. Box GK, Agana; Robert (Buddy) Simpkins, (671) 477-3207



HONDURAS

Autodromo Accion, Quinta Santa Maria, San Pedro Sula, Honduras, Colonia Rivera Hernandez; Eduardo Hondal, (504) 542-2061



HONG KONG

H.K.R.C. Model Car Racing Club, Lot 2130-2137, Ko Po Tsuen, Sha Tau Kok Rd., N.T., Hong Kong; Alex Chan, (852) 659-2822

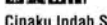


Kingsville Buggy Arena, Wong Chuk Yeung Village, Shatin, N.T.; Pak Yeung, (852) 607-0828



INDONESIA

1st Circuit, Kompleks Villa, Kalijuduh Indah, Surabaya; 62-31-5681965



Cipaku Indah Speedway, J1 Cipaku Indah II/2, Bandung 40143, Indonesia; Cipaku Indah Hotel, Brad Lake, 62-22-210219



Karinda Off-Road R/C Car Model Circuit, Perumahan Bumi Karang Indah, J1 Karang tengah Rayam lebak bulus, Jakarta-Selatan 12440; Wiwied W. Soedarmadi, 62-21-7900878



Pondok Cabe Circuit, J.L. Kunir No. 83, Pondok Cabe, Ciputat, Jakarta, Indonesia; Ali Agus Salim, 7403568-9; fax 7491533



Sentul World Hobbies, Citeureup Bogor Jawa Barat, Indonesia; International Circuit Hilton Hartanto, Ian Sentul International Sirkuit, KM 42 62-21-751-2439



ISRAEL

Ircra Off-Road, Rahanana, Israel; Yaron Zafiris, (972) 030549937



Nahshoneat, Abba Nilel Silver Str. 64, Haifa, Israel 32809; Golan Levy, (972) 039386444 or (972) 04231252



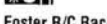
ITALY

Associazione Modellisti Cossato, via P. Maffei, Cossato 13014, Biella, Italy; Zanellato Romildo, 015-405881; fax 015-922709



JAPAN

Courtney Off-Road, Camp S.D. Butler, Okinawa, Japan, FPO AP 96379; USMC Arts & Crafts, 81-61173-53674



Foster R/C Raceway, Camp S.D. Butler, Okinawa, Japan, FPO AP 96379; Camp Foster Arts & Crafts, 81-61173-53674



Hansen Off-Road, Camp S.D. Butler, Okinawa, Japan, FPO AP 96379; USMC Arts & Crafts, 81-61173-53674



Iwakuni R/C Track, PSC 561, Box 978, FPO AP 96310-0978; David T. Eck, 81-6117-53-3662



Misawa R/C Raceway, PSC 76, Box 2946, APO AP 96139-2946; Terry Brancheau, 81-17653-5181 ext. 222-5324



Yokota R/C Racers, PSC #78, Box 4274 APO AP 96326, Tokyo, Japan; Brad Johnson, 011-813-11-757-7655



Zama Off-Road Raceway, 17th ASGCM Unit 45013, Box 3232, APO AP 96338 Japan; SFC Ken Campbell, 81-3117-63-8478



KUWAIT

Inferno DX 4WD Track, P.O. Box 9167, Ahadi, Kuwait 61002; Yousuf Acqatari



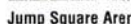
LEBANON

Wild Willy RCC, Oscar St-Jal Eddie, Beirut, Lebanon; 00961-1-403751



MALAYSIA

Titivangsa Raceway, Lot 128, Ampang Park, Shopping Centre, Jalan, Ampang, Kuala Lumpur, Malaysia 50450; R.A.C.E. Sdn Bhd., 03-2614496

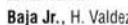


Jump Square Raceway, Al21, SG, Buloh NV, 47000, SG, Buloh, Selanor, Malaysia; Thomson Chong, (603) 656-2513

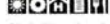


MEXICO

Alices Off Road, Lopez Mateos y Rayod S/N, Ensenada, Baja California, BC 22830; Jorge Bustamante, 667-6-1476, 61477, 86729



Baja Jr., H. Valdez 151 Pte. Y Gmo. Prieto, Los Mochis Sinaloa 81200; Memo Asencio, Gaby Macias, 681-20276; fax 681-26430



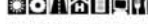
Club Kyosho de Autodelismo Departano, Av. Pacifico 216 Coyoacan; Ajusco-Toluca Km 15.3 DE, Mexico 04330, Ing. Jorge Perez Holder, 525-544-08096; fax 525-544-7133



Cinamo Coca-Cola, Ruiz Cortines 620 Col. Central de Carga, Guadalupe, Nuevo Leon 67120; Sergio Garza, 83-35-70-09/79-32-33



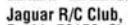
Hobby Centro, 12 De Diciembre No. 3070-A, Guadalajara, JAL 45550; Alejandro Ortiz Del Toro, 36-21-46-28



Hobby's Formula, Au observatorio 457 DF 01120; 905-502-3620



Hobby Model's Raceway, Blvd. Garcia de Leon, 1555, Morelia, Michoacan 58260; 431-5-01-22



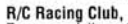
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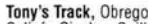
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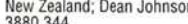
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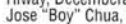


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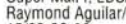


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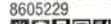


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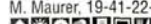


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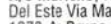


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This is my page—mine! The opinions expressed on this page do not necessarily represent the opinions of the entire *Car Action* staff. Any resemblance to reality is purely coincidental. Send your correspondence, hate mail, love letters, photographs—anything you like—to Chris's Back Lot, c/o *R/C Car Action*, 100 East Ridge, Ridgefield, CT 06877-4606. My Internet address is: chrisc@airage.com.



Chris's

BACKLOT

by Chris Chianelli

Take Control— Make it Happen!

the costs so more can enjoy evenly matched racing—and about how it ain't gonna happen, guys, unless you help make it happen.

Chris, we need to do something. To have any possibility of being competitive in races, we must upgrade our cars and trucks with hundreds of dollars' worth of hop-ups. Why don't the manufacturers offer a TRUE competition-ready vehicle? Because they make more money selling us hop-ups than they would selling us better cars.

Chris, you are an influential person in the R/C world. Could you do something to help our cause? An article in *R/C Car Action* and pressure on the major manufacturers could help our case A LOT! Thanks for listening to a concerned fellow R/C'er.

David Gosnell

dave@3di-soft.com

Biz Director, 3DI Software, Inc.;

<http://www.3di-soft.com>

Chris, every six months, a new "latest, greatest" product hits the market and is guaranteed to get you into the A-main. I know that progress has its good points, but don't you think that most people have limited funds for this hobby? Even if that nuclear, cooled, 16-gazillion-watt motor could get you into the A-main, you'll still need that new 4.4-gigawatt battery pack to power that new proton-induced multi-skewed motor. Where will this end?

I know, I'm being a little melodramatic, but there is a problem. What are your thoughts on this?

Jeff Roe

promatch@ctaz.com

David and Joe,

Before I answer your questions, I'd just like to say this. A motor alone—I don't care how expensive—will not win races. OK; now that's off my chest, for the millionth time! let's move on.

I understand your points, but you're both barking up the wrong tree. You can't blame the manufacturers for pushing the technological envelope; it's part of what manufacturers do. I don't care if they're building rockets or razor blades; manufacturers will always try to find a better way, will always explore the

outer reaches of technology—and well they should! The long-term results of their R&D work are better products for us. The wheels of progress have always been, and will always be, in motion. If it weren't so, we'd still be riding horse-drawn carts. That doesn't mean we have to run out and buy ever "new and improved" products. Be ready for the high-pressure blabbermouth who'll tell you that you can't live without this new Karma-Force speed control with Mosfets made of Tibetan mountain crystals.

I do, however, agree that the latest "high tech" goes to the highest bidder. This is the whole reason for "class" or "spec" racing. Let's look at full scale for moment. Stock-car racing imposes rules on intake restrictor plates so race teams can't go crazy with exotic induction. One year at Indy, STP showed up

with a totally unorthodox Turbine car

and blew everyone off the track by laps. The car was quickly outlawed. The same thing happened in F1 with the six-wheel Tyrrell car. The point is, except in some unlimited classes, full-scale racing controls itself and so must we.

Who's in control of the R/C race scene? The track/hobby shop owner. Who does he respond to? If he's a smart businessman, the answer is you, the customer. Get together with your buddies, approach your

hobby shop owner and tell him you want some CCR (cost-controlled racing) classes. If he has any vision at all, he'll see the potential. Would he rather sell five \$75 motors or 25 \$30 motors? This ain't rocket science. Enough said about that.

Now, as for you, David, I think you and I need to spend just a wee bit more time together. It was your question, "Why don't the manufacturers offer a true competition-ready vehicle?" that threw me. I mean, where've you been shopping for R/C gear, buddy? Jupiter? If you can't be competitive with an Associated T3 Team truck or a Losi XX 'CR' truck as it comes out of the box, you simply haven't yielded to the truth. Nothing—NOTHING!!—can substitute for practice.



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